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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

AUGUST AND SEPTEMBER,

1873.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1873.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Statistical Division, September 24, 1873.

SIR: I submit herewith for publication a report of crop returns for August and September, a statement of current market prices of principal farm products, a condensation of statistical collections of this Division, and a mention of the mission of the Statistician to Europe; together with contributions from other Divisions of the Department, including entomological records, results of microscopic investigation, a treatise on the osier willow by the Commissioner of Agriculture, some mention of the linen industry of Silesia, of the beet-sugar industry, and of the culture and manipulation of tea.

J. R. DODGE,
Statistician.

HON. FREDK. WATTS,
Commissioner.

REPORT OF CROP RETURNS.

WHEAT.

The average condition of the wheat-crop for the entire country, according to the returns of the present month, is 95. A comparison with the September averages of last year will illustrate the crop prospects of the present, when the increased wheat area of the present season is duly considered:

States.	September, 1873.	September, 1872.	States.	September, 1873.	September, 1872.
Maine.....	83	109	Louisiana.....		112
New Hampshire.....	95	95	Texas.....	85	120
Vermont.....	96	91	Arkansas.....	95	106
Massachusetts.....	102	97	Tennessee.....	78	116
Rhode Island.....			West Virginia.....	91	96
Connecticut.....	104	98	Kentucky.....	85	110
New York.....	72	85	Ohio.....	97	84
New Jersey.....	105	89	Michigan.....	96	95
Pennsylvania.....	102	76	Indiana.....	84	97
Delaware.....	85	92	Illinois.....	93	95
Maryland.....	96	74	Wisconsin.....	107	98
Virginia.....	82	99	Minnesota.....	109	104
North Carolina.....	82	109	Iowa.....	100	106
South Carolina.....	75	102	Missouri.....	100	79
Georgia.....	75	104	Kansas.....	100	85
Florida.....			Nebraska.....	107	109
Alabama.....	85	105	California.....	92	
Mississippi.....	90	102	Oregon.....	107	96

Reports were received from 844 counties, of which 246 were average, 185 above, and 413 below. The principal wheat-producing States are thus represented :

States.	Counties above average.	Counties average.	Counties below average.	States.	Counties above average.	Counties average.	Counties below average.
Kentucky.....	3	10	19	Minnesota.....	17	4	7
Ohio.....	9	16	17	Iowa.....	16	15	18
Michigan.....	10	13	7	Missouri.....	14	12	23
Indiana.....	1	10	32	Kansas.....	13	9	14
Illinois.....	11	10	21	Nebraska.....	9	4	3
Wisconsin.....	16	9	.....	California.....	3	8	11

The wheat of Northern New England was injured by drought in June, and the quantity will be less than usual, while the quality is generally good. Massachusetts and Connecticut will have a fully average yield upon an area too small to be of essential aid in the bread supply.

From counties representing the largest portion of the wheat area of the State of New York, 35 in number, only 2, Tioga and Wyoming, give figures higher than 100; 14, of which only Yates is of any wheat-growing prominence, return 100; Monroe, which usually grows one-twelfth of the crop, claims but 65, Livingston 45, Ontario 75, Genesee 40, Steuben 91, Seneca 80; these counties usually yielding above half a million bushels each. Thirteen counties, which produced nearly seven millions in 1869, average 70; and the general average of all is 72. The quality is good, except in cases of slight damages by rains in harvest. A single county in New Jersey, Union, reports condition less than 100; Bergen, Gloucester, Monmouth, Sussex, and Essex return 100; Salem, 180; and Warren, Camden, and Cumberland, 110. The average is 105. The harvest was secured in excellent condition. Returns from 37 counties in Pennsylvania, which represent about four-fifths of the crop, average 102; 11 range from 50 to 97; 12 are put at 110, among which are Lancaster and York, together producing more than three millions of bushels. The grain thrashes out satisfactorily and makes an unusually good quality of flour. The yield in Maryland appears to be 4 per cent. less than an average, of good quality except where injured by rains before or after harvesting. The best reports are from Frederick and Washington, which are large producers.

The present has not been a good wheat year in the South. The average for Virginia is but 82, the deterioration being attributed to rain when wheat was in bloom, and to subsequent droughts while maturing. A prominent cause was doubtless insufficient preparation and fertilization, as large yields were obtained in several instances of good cultivation—in one case in Essex, a field of five acres yielding 140 bushels. The reports from North Carolina average 82 also, and those of South Carolina and Georgia 75, Alabama and Texas 85, and Mississippi 90, very few counties reporting wheat east of Texas. The reporter in Dallas County, in the latter State, claims an average yield of 20 bushels per acre. Arkansas and Tennessee have better crops than the Gulf-coast States, but not a full average.

A full crop has not been secured in West Virginia, the causes of depreciation being the midge, smut, rust, and rain in the shock. In several counties the yield is better than was anticipated. Kentucky falls

15 per cent. below average, as a whole, though some counties report one of the best crops ever obtained. There is much complaint of unwholesome flour from wheat grown in low lands.

Ohio reports cover more than half the area in wheat, and indicate a very nearly average yield, of about average quality, in some places quite good, in others somewhat shrunken and yielding less than was expected. Among the counties making the best returns are Miami, Butler, Greene, Shelby, Jefferson, Medina, and Coshocton.

Michigan has nearly a full crop of wheat of very good quality, well secured, and generally exceeding the expectation in thrashing. Several fields of not less than 48 bushels per acre are reported in Mecosta County. Oakland, which can usually send a million bushels to market, is reported at 100, and Kalamazoo at the same figure. Genesee, which produces more than half a million, is represented by 113. Only 7 counties report less than 100.

In Indiana this crop has suffered from winter-killing, the fly, chinch-bug, and heavy rains in the shock, causes which indicate a depreciation of 16 per cent. A white-bearded variety in Wabash has yielded 35 bushels per acre. Wayne, Marshall, Wells, Whitley, all wheat-producing counties, make returns of 100; other counties of much prominence range from 75 to 90.

In 43 counties of Illinois the average is 93. Among the counties making returns above 100 are Carroll, Winnebago, De Kalb, De Witt, Warren, Marshall, Lee, Clinton, Schuyler, Rock Island, Hancock; counties returning 100 are Crawford, Pike, Marion, Champaign, Putnam, Effingham, Ogle, Stark, Mason, Cass. Spring-wheat has been injured to some extent by chinch-bugs, rust, and storms. The assessor in Jersey reports an area of 49,000 acres, which the thrashers find to yield variously from six to fifteen bushels per acre. The Odessa wheat from the Department yields from 18 to 30 bushels per acre, and gives much satisfaction.

Wisconsin makes very encouraging returns, in no case below 100, and averaging 107 upon an increased area. Dane County, almost always good for two or three millions of bushels, returns 100, and Dodge County, also exceeding two millions, claims 120. Several large counties claim a yield 10 per cent. better than an average.

Minnesota is the banner State of the year in wheat-production. A large increase in acreage in new and old counties was returned in June; and the average for condition is 109. Wabasha, a county annually yielding between one and two millions of bushels, returns 125; and of other counties of similar importance Goodhue and Winona send 110, and Fillmore 105. Only 7 counties report a figure less than 100. In several counties it is claimed to be the best crop for many years, both for quality and quantity.

Returns from two-thirds of the wheat area of Iowa indicate an average yield upon an increased area. The quality is generally superior with some exceptions of injury from rains and blight. Most of it was secured in good condition.

Missouri has secured an average crop, mostly of good quality. Chinch-bugs caused a reduced yield in some counties.

In Kansas the yield is nearly an average, though much reduced by chinch-bugs and rust in several counties.

The crop of Nebraska is large and the quality excellent.

The crop of California is not so good as was expected; a large reduction from the yield of last year may be calculated upon. In Sonoma the yield will be large, and the return for Stanislaus is 100, Santa Clara

96, Contra Costa 95, San Joaquin 80, and several small counties 75. The average condition in 24 counties is 93.

In Oregon no county reports less than 100, the average being 107. In Grant County the lowest figure named for the average yield is 25 bushels.

The reports from the Territories are generally favorable. It is claimed that the county of Walla-Walla, in Washington, can export 500,000 bushels, and that the average yield is 35 bushels per acre; some large fields 67 bushels.

MAINE.—*Piscataquis*: All kinds of small grain well filled, but thin on the ground; killed out by worms and drought; wheat of better quality than usual, but not so much of it. *Oxford*: Pinched by drought.

NEW HAMPSHIRE.—*Carroll*: Many wheat-fields injured by drought in June. *Hillsborough*: Injured by drought.

VERMONT.—*Grand Isle*: Grain filled well.

CONNECTICUT.—*Hartford*: Unusually bright and fine.

NEW YORK.—*Chemung*: Injured by rain in harvest. *Yates*: Fultz successful. *Albany*: Good and well secured. *Wyoming*: Mostly good and well secured. *Genesee*: Fine, but the smallest crop for years. Tappahannock and Fultz do well. *Eric*: Small yield, but good; Fultz did well; Tappahannock not so well.

NEW JERSEY.—*Warren*: Good yield; fine grain and flour. *Cumberland*: Harvested in excellent condition.

PENNSYLVANIA.—*Northampton*: Good in quantity and quality; straw and grain fully 50 per cent. better than last year. *Berks*: Thrashes out more than usual per hundred sheaves, and yields superior flour. *Clinton*: Touzelle from the Department fine; four quarts yielded sixty quarts; Tappahannock not successful. *Indiana*: Good quality and condition. *Greene*: Cut in good order, but somewhat damaged in the shock. *Tioga*: Straw light; grain good.

MARYLAND.—*Baltimore*: Secured in good order; but light rains in harvest. *Howard*: Harvested in fine condition, but injured by recent rains. *Saint Mary's*: Injured by wet in the shock; one-fourth thought to be ruined. *Cecil*: Berry very good; product below average.

VIRGINIA.—*Charlottesville*: Greatly below expectation in quantity, but of good quality. *Powhatan*: Thrashed out poorly; farms usually producing thousands of bushels will this year turn out only hundreds; this is due to heavy rains while the wheat was in bloom. Tappahannock yielded abundantly in spite of all the drawbacks. *Pulaski*: Not thrashing out well; quality poor; Fultz did well. *Frederick*: Fultz a great success in every case. *Patrick*: Touzelle frozen out; White California also a failure. It seems that no light-colored wheat will succeed here. *Amelia*: Yield below expectation; less than last year. *Shenandoah*: Below expectation, both in quantity and quality. *King George*: Light, but good; some sprouting in the shock. *Buckingham*: Harvested in fine condition, but reduced 25 per cent. by drought, smut, chinch-bugs, &c. *Floyd*: Tappahannock does well; Touzelle too late in ripening. *King and Queen*: Better than last year. *Essex*: Disappointment in yield; Fultz best; Tappahannock next. A field of five acres, seeded with 7 bushels, produced 140 bushels, or 28 bushels per acre after thrashing. The same field three years ago produced but 70 bushels of Tappahannock, or 14 bushels per acre. Many improved small fields this year yielded from 18 to 28 bushels per acre. *Goochland*: Fultz universally satisfactory. *Highland*: Short, but good. *Mecklenburg*: Touzelle from the Department did tolerably, but its straw is too weak. *Prince George*: Two-thirds of a crop.

NORTH CAROLINA.—*Lincoln*: Fultz, in every case, excelled in both yield and quality. *Caswell*: Experimental culture of Touzelle very successful. *Persou*: Greatly improved by recent rains, but will not reach an average. *Alamance*: Thrashes out well; good grain. *Burke*: Tappahannock from the Department has made the finest yield ever known here; Fultz has done well. *Clay*: Tappahannock did well. *Perquimans*: Wheat culture almost abandoned; yield, five bushels per acre. *Polk*: Tappahannock fine; Touzelle a failure. *Wilkes*: One-third of a crop. *Stanly*: Fultz and Tappahannock successful; Touzelle poor.

SOUTH CAROLINA.—*Chesterfield*: Fultz does well, but is not weevil-proof; Tappahannock does better.

ALABAMA.—*Blount*: Poor in quantity and quality; Tappahannock did well; Touzelle worthless. *Coffee*: Good.

FLORIDA.—*Santa Rosa*: Tappahannock successful. *Suwannee*: Tappahannock and Touzelle flat failures.

TEXAS.—*Red River*: Harvested in the rain, and consequently injured greatly; saved about 14 bushels per acre; Touzelle did poorly, but the Tappahannock was fine. *Corryell*: Thrashed in fine condition. *Dallas*: Will average 20 bushels per acre of fall

plump grain. *Burnet*: Yield from 4 to 7 bushels per acre. *Atascosa*: Grasshoppers destroyed the small grains. *Bandera*: Fultz promising, but destroyed by frost and grasshoppers.

ARKANSAS.—*Boone*: Injured by wet summer and dry fall last year.

TENNESSEE.—*Jackson*: A good deal of sick wheat here. *Rhea*: Quality good; Fultz wheat suits the climate. *Loudon*: very little No. 1 wheat raised this season. *Hamilton*: Short but good grain. *Washington*: Many fields will not return their seed. *Greene*: Injured in the shock by rain. *Carter*: Red wheat damaged by scab; white generally of good quality. *Lincoln*: Tappahannock well adapted to the climate; yield, 25 bushels per acre. *Hardin*: Injured somewhat by rains in the shock. *Coffee*: Light and poor. *Monroe*: Good on well-drained land properly prepared, but generally poor. *Sullivan*: Poorest yield, both in quantity and quality, since the war; where proper cultivation and fertilization were used a crop of 25 bushels per acre was realized by "book-farmers." Fultz appears to be exempt from the ravages of the fly; it is hardy and prolific. *Grainger*: Fultz wheat is a grand success; yields more and stands winter better than any other variety.

WEST VIRGINIA.—*Hardy*: Injured by rain in the stack. *Mineral*: Considerably injured by wet. *Pocahontas*: Fair. *Raleigh*: Did better than was expected; filled finely. *Tucker*: Failure through rust; in some places not worth cutting. *Brooke*: Sprouting in the stack; damage 10 per cent. *Grant*: Less than was expected. *Jackson*: Less than was expected. *Putnam*: Injured by white blight, midge, and smut, as well as by rain, in the shock. *Monongahela*: Very poor. *Randolph*: Much better than was anticipated.

KENTUCKY.—*Taylor*: Badly rusted and scabbed in many cases. *Laurel*: A great deal of "sick" wheat thrashed out. *Marion*: Much affected with scab; millers report a great deal of "sick" wheat. *Shelby*: Fultz averaged 30 bushels per acre. *Boone*: A quart of Tappahannock brought 40 pounds of wheat. *Lewis*: Excelled any former crop. *Scott*: Fultz a success. *Anderson*: Average. *Lincoln*: Better than was expected. *Logan*: Did not thrash out as well as was expected; some wheat raised on low land called sick wheat; its flour causes sickness at the stomach when eaten. *Anderson*: About average. *Fayette*: Quality below average. *Hardin*: Fultz a great success; 2 bushels on two acres produced 83 bushels of measured grain.

OHIO.—*Coshocton*: Secured in good condition. *Hardin*: Tappahannock yielded more abundantly, but of lighter grain; appears to hybridize successfully with Lambert and Mediterranean. *Jackson*: Thrashing out better than was expected. *Stark*: Rusted. *Delaware*: Will rate in market as No. 2. *Greene*: About average in quality; some of it shriveled. Tappahannock ripened about seven days before the common varieties. Fultz five days in advance of other varieties, though sown fourteen days later. Each variety produced about a bushel to the four quarts. *Marion*: Has not turned out as well as was expected, being somewhat shrunk. *Vinton*: Fultz wheat from the Department excels all others; it is a great success here. *Mercer*: Light, but fair.

MICHIGAN.—*Calhoun*: Harvested in good order. *Gratiot*: Never harvested better; best crop ever raised here. *Saint Joseph*: Full average in quality; quantity deficient. *Hillsdale*: Winter-killed. *Jackson*: Good quality; thrashing out larger than was expected. *Oakland*: Good, and in good condition. *Lapeer*: Light, but good and well secured. *Mecosta*: Winter-wheat extra; one field averaged 45 bushels per acre, and others are expected to thrash out still better.

INDIANA.—*Decatur*: Much damaged by rain in the shock. *Gibson*: Poor on bottom-lands. *Jennings*: Yield reduced to 6 or 7 bushels per acre by fly and chinch-bug. *Morgan*: Yield tolerable; quality fair. *Noble*: Good, when not winter-killed. *Switzerland*: Harvested light. *Wabash*: We find a white-bearded wheat the best variety; it yields 35 bushels per acre without manure; no name for it; it was sent here by express and sold for charges, no one claiming it. *Dubois*: Shorter and poorer than was expected. *Hamilton*: Will average 10 bushels per acre. *Orange*: From 5 to 20 per cent. below expectations; injured by rain in the shock. *Brown*: Short, but good; not over 7 bushels per acre. *Harrison*: Not so good as was expected. *Boone*: Grains defective. *Wells*: Yields well. *Owen*: Injured by heavy rains after cutting. *Hancock*: Injured one-half since cutting; previously suffered from chinch-bugs. *Dearborn*: Did not thrash out as well as was anticipated. *Clay*: Thrashes out poorly for the amount of straw.

ILLINOIS.—*Morgan*: Did not fill well; blown down and washed away in many places. *Sangamon*: Badly rusted in the south part of the county. *Clinton*: Thrashing out better than was expected. *Lawrence*: Not thrashing out as well as was expected; increased acreage will be sown. *Vermillion*: Three-fourths shriveled; one-fourth plump. *Jersey*: Yield very disappointing; 6 to 15 bushels per acre; the assessor reports 49,000 acres. *Schuyler*: Tappahannock wheat a failure. *Winnebago*: Crop good; Odessa wheat sent from the Department several years ago has become quite popular, yielding at the rate of 18 to 30 bushels per acre of 64 pounds each; China-tea wheat yields from 12 to 25; wheat bringing from \$1 to \$1.06 per bushel. *Lee*: Plump and fair, averaging 20 bushels per acre. *Boone*: Spring-wheat a fair yield, though injured by chinch-

bugs in some places. *Effingham*: Acreage increased, but crop somewhat diminished. *Ogle*: Spring-wheat good, and harvested in fine condition. The Provenç spring-wheat from seed furnished by the Department failed to head; it is probably a winter variety. *De Kalb*: Exceedingly fine. *Cass*: Turning out poorly. *Mason*: Average yield; good quality.

WISCONSIN.—*Waukesha*: Best yield since 1860; gathered in prime order. *Calumet*: Tappahannock yielded $20\frac{1}{2}$ bushels per acre; ten days earlier than the common wheat. *Dane*: Best crop for years, in spite of drought and chinch-bugs. *Dodge*: Averages 18 bushels per acre; being marketed very rapidly. *Pierce*: Good quantity and quality. *Walworth*: Better than was expected. *Washington*: Will average 20 bushels per acre; all kinds did well except Club, which rusted badly and is scarce worth screening. *Outagamie*: Spring wheat thrashing out wonderfully. *Clark*: Increased attention to winter wheat.

MINNESOTA.—*Wright*: Harvested in fine condition; good quality and average quantity; prices low. *Blue Earth*: Good; the much sought Red Osauka has rusted badly. *Carver*: Thrashing-machine men report winter wheat as averaging 30 to 35 bushels, and spring wheat 18 to 20 bushels per acre. *Waseca*: Wheat never filled better. *Dodge*: Promises to be the best crop for many years; Red Osauka rusted badly. *Winona*: Crop never finer. *Sherburne*: Good quality and condition, but one-fourth short. *Cottonwood*: Fine but light. *Goodhue*: Spring wheat well secured; thrashing out more abundantly than last year. *Steele*: A little less than last year but of better quality, and secured in better condition for market; the increased acreage will make it the best crop yet grown here; 90 to 95 cents per bushel. *Houston*: Above average, of excellent quality and secured in good order. *Jackson*: Short, but good. *Nicollet*: Mostly No. 1. *Renville*: Looks well, but below expectations on thrashing. *Benton*: Stacked in splendid condition. *Fillmore*: Nearly all in the stack and uninjured by rain. *Mower*: Finer than for many years. *Stearns*: Harvested in good condition; good quality. *Wabasha*: Mostly thrashed in good condition.

IOWA.—*Adair*: Provenç wheat did not head; soil too rich for it. *Crawford*: Fine harvest weather; injured somewhat by hail, but improved 25 per cent. by increased acreage and improved quality of the grain. *Tama*: Good quality and condition; yield averages 12 bushels per acre. *Woodbury*: Injured 25 per cent. by grasshoppers; Australian spring wheat from the Department a failure, through the ravages of grasshoppers. *Benton*: Benefited by late fine weather. *Calhoun*: Straw heavy but heads somewhat blighted. *Chickasaw*: Never better; plump, bright, and well secured. *Cass*: Yield 17 bushels per acre; an average crop. *Blackhawk*: Superior both in quantity and quality. *Guhrrie*: Some good, others indifferent; rotation here of only wheat and corn; about equal to no rotation at all. *Polk*: Somewhat smutted. *Jackson*: No. 1 in quality, but decreased yield. *Shelby*: Barely average, disappointing high expectations. *Harrison*: Injured by blight and rains; will average 18 bushels per acre. *Mitchell*: Well harvested. *Taylor*: Averages from 18 to 25 bushels per acre; Provenç wheat did poorly. *Johnson*: Spring wheat above average.

MISSOURI.—*Moniteau*: Does not thrash out as well as was expected; Tappahannock a failure; freezes out worse than ever; Norman wheat has been successful here for twenty-five years. *Platte*: Saved in good condition; selling at \$1.25 per bushel. *Cape Girardeau*: Tappahannock and Fultz wheats about equally successful. *Crawford*: Tappahannock has done extremely well, as also the Fultz. *Perry*: Fultz a great success. *Ralls*: Yield unusual; quality good. *Taney*: Tappahannock the best of six varieties sown. *Worth*: Far better than was expected; some fields yielded 26 bushels per acre. *Grundy*: Tappahannock does not suit the climate. *Dallas*: Good crop but light. *Laclede*: About three-fourths of a crop; reduced by chinch-bugs.

CORN.

The yield of maize will be considerably lower than that of last year. None of the principal corn-producing States return as high an average as in September of 1872. Minnesota in the west and New Jersey in the east report relatively and absolutely high averages. Maryland, Virginia, and Florida present relatively higher figures, and all other Southern States lower than in 1872, though those upon the Atlantic coast promise an average crop. The yield of the Southwestern States was unusually large last year, but will be considerably under an average the present season. It suffered from too much moisture on bottom lands. It is also a noticeable fact that in the States where rains have been most injurious, reports of local droughts are somewhat numerous. Complaints of low vitality from bad seed are common in Ohio and Michigan. Summer droughts

were injurious in portions of the same States, and in Indiana, Illinois, Iowa, Missouri, and Kansas. The crop is generally reported as two weeks later than usual. Chinch-bug injuries are reported in Indiana, Illinois, Missouri, and Kansas. Grasshoppers proved destructive in sections of Wisconsin, Iowa, and Kansas.

The acreage appears to be about 4 per cent. less than in 1872—a reduction equivalent to more than a million acres, mostly in Ohio, Indiana, Iowa, and Illinois, more than half of which is in the latter State.

The number of counties reporting corn is 1,014, of which 222 make average reports, 211 higher than average, and 581 lower. The following is the statement in full:

States.	Counties above average.	Counties average.	Counties below average.	States.	Counties above average.	Counties average.	Counties below average.
Maine	0	1	11	Texas	2	6	32
New Hampshire	1	6	1	Arkansas	5	10	12
Vermont	1	2	6	Tennessee	15	10	25
Massachusetts	1	6	9	West Virginia	17	7	5
Rhode Island	0	2	1	Kentucky	10	5	18
Connecticut	0	1	4	Ohio	5	11	26
New York	4	6	25	Michigan	0	7	23
New Jersey	4	5	3	Indiana	6	10	27
Pennsylvania	7	2	22	Illinois	1	5	36
Delaware	0	0	1	Wisconsin	3	7	16
Maryland	1	3	7	Minnesota	2	12	2
Virginia	23	12	24	Iowa	1	10	32
North Carolina	19	15	18	Missouri	1	5	52
South Carolina	2	2	11	Kansas	1	4	31
Georgia	27	12	15	Nebraska	1	3	12
Florida	11	4	4	California	3	2	2
Alabama	11	5	15	Oregon	5	3	1
Mississippi	3	4	18				
Louisiana	6	5	10	Total	211	222	581

MAINE.—*Penobscot*: Improved during August. *Waldo*: Suffering for rain. *Oxford*: Injured by drought and frost. *Franklin*: Suffered from drought and cold nights in August.

VERMONT.—*Rutland*: Promising. *Caledonia*: On the river crops are dried up: on the uplands seldom better. *Franklin*: Full average but backward. *Orleans*: Not so forward as last year. *Grand Isle*: Greatly improved of late. *Chittenden*: Ripening finely.

MASSACHUSETTS.—*Plymouth*: Looks well. *Norfolk*: Good but short.

RHODE ISLAND.—Early plantings suffered from drought; yield will be 10 per cent. above average of ten years past.

NEW YORK.—*Delaware*: Crops late: a warm fall will make a full crop. *Wyoming*: Greatly improved. *Otsego*: With a warm September the crop will be large. *Livingston*: Maturing slowly. *Genesee*: Late but fair growth of ears. *Seneca*: Late. *Erie*: Spotted; first planting good; much replanted on account of cut-worms. *Sullivan*: Ten days late; would be much injured by an early frost.

NEW JERSEY.—*Warren*: Stalking finely. *Camden*: In many places scalded. *Gloucester*: Crop heavy but backward. *Hudson*: Corn good and nearly out of danger. *Burlington*: Weather too cloudy and rainy for late corn to ripen fast. *Essex*: Greatly improved by the abundant rains of August.

PENNSYLVANIA.—*Northampton*: Looks fair. *Wyoming*: Threatened by frost in fields back from the river. *Lehigh*: Backward but growing. *Northumberland*: Damaged by late rains. *Westmoreland*: Greatly improved. *Clearfield*: Kept back by rain. *Beaver*: Late; in danger from frost. *Armstrong*: Extra growth of late plantings; if frosts delay the crop will be large. *Juniata*: Thin on the ground but thrifty. *Lycoming*: Thin on the ground but good ears and grains. *Indiana*: Doing finely. *Tioga*: Heavy crop in prospect. *Franklin*: Injured by hail in some places. *Elk*: Had to be replanted; stand poor and late. *Lawrence*: Late corn greatly forwarded by the warm weather.

DELAWARE.—*Kent*: Greatly improved by late rains.

MARYLAND.—*Frederick*: Prospect never better. *Baltimore*: Improved by late rains. *Washington*: Improved to average by late rains. *Charles*: Improved; may reach average.

VIRGINIA.—*Prince George*: Poorest crop for many years. *Charlotte*: Seriously injured by drought; late rains too late for its recovery. *Warwick*: Early-planted corn suffered from drought; late plantings improved by late rains. *Rappahannock*: Promising. *New Kent*: Much improved by late rains. *Henrico*: Greatly injured by drought. *Bedford*: Damaged by heavy storms. *Luneburg*: Good weather and fair prospects. *Patrick*: Much injured by drought. *Caroline*: Saved by late rains. *Amelia*: Damaged by drought. *Middlesex*: Best crop in four years. *Shenandoah*: Crops increased to an average. *Page*: Extraordinary crop. *King William*: Shortened by drought. *Rockingham*: Largest crop ever grown. *Nelson*: Wonderfully improved. *Campbell*: Very fine. *Fairfax*: Never more promising. *Washington*: Good in some places, poor in others. *Prince William*: Growth heavy, but backward. *Orange*: Needs dry weather to mature. *James City*: Improved by late rains. *Spottsylvania*: Greatly improved by late rains. *Warren*: Looks remarkably well. *Surrey*: Improved and promising. *James City*: Improved by late rains. *Orange*: Best crop since 1865. *King George*: Greatly improved. *Southampton*: Acreage decreased; crop good. *Clarke*: Backward. *Essex*: Greatly improved by late rains. *King and Queen*: Much improved; better than last year. *Chesterfield*: Wonderfully improved. *Grayson*: Great improvement by late rains. *Highland*: Full and fine crop; fine season. *Mecklenburg*: Injured by chinch-bug. *London*: Injured by bud-worms and bore-worms.

NORTH CAROLINA.—*Lincoln*: Promises a fine yield. *Robeson*: Benefited by late rains; generally good. *Sampson*: Damaged on low lands. *Caswell*: Injured by drought in the fore part of the season. *Davidson*: Greatly improved by late rains. *Mecklenburg*: Corn would have been a large crop if the rain had not prevented its being worked. *Moore*: Best crop for several years. *Chowan*: Rapidly improved. *Gaston*: Destroyed by floods on very low lands; good on other lands. *Hertford*: Crop magnificent. *Alamance*: Upland crops greatly improved by late rains. *Edgecombe*: Good. *Harnett*: Looks very fine where well cultivated. *Cumberland*: Prospect very good. *Greenville*: Greatly improved. *Rowan*: Greatly improved by late rains. *Newbury*: Fodder nearly destroyed by rains. *Franklin*: Improved by August rains and fine where well cultivated. *Camden*: Damaged by heavy rains. *Madison*: Improved. *Gadkin*: Much improved by late rains. *Anson*: Sandy lands had too much rain for a good crop. *Stanley*: Greatly brought out by late rains. *Wilkes*: Greatly improved by late rains.

SOUTH CAROLINA.—*Fairfield*: A complete failure on river and creek bottoms. *Clarendon*: Shortened by early drought. *Bertie*: Very good. *York*: Rapidly improving. *Orangeburg*: Yield light; fodder inferior. *Edgefield*: Good average. *Union*: Will supply two-thirds the home demand.

GEORGIA.—*Lincoln*: Corn prospects not so good. *Taylor*: Not so good as was expected. *Richmond*: Shortened one-fourth by drought of June and July. *Carroll*: Late corn on bottom-lands has done better than was expected. *Doolley*: Injured by rain. *Gwinnett*: A good average. *Clinch*: Crop made. *Calhoun*: Crop good. *Baldwin*: Increased average and yield. *Brooks*: Good. *Wilkes*: Upland corn well worked is very fine; much of the lowland plantings worthless on account of excessive rains. *Jackson*: Looks well for the work it has received. *Heard*: Very fine. *Whitfield*: Matured and fine. *Franklin*: Reduced by drought.

FLORIDA.—*Santa Rosa*: Pennsylvania yellow corn a success. *Orange*: Fine weather for potatoes. *Madison*: Early corn not so well developed as last year. *Jefferson*: Crop good. *Taylor*: Finest prospect ever known. *Hillsborough*: Reported as the finest crop ever gathered here; this results from improved farming. *Wakulla*: Crop made but damaged by late rains; much sprouted on the stalks. *Jackson*: Crop larger than last year. *Terry*: Splendid; better than for years. *Suwannee*: Yellow field-corn from the Department a success.

ALABAMA.—*Greene*: Corn suffering for work on account of wet. *Saint Clair*: Crop fine; Pennsylvania yellow corn doing well. *Hale*: Very fine. *Clarke*: Crop light, through excessive rains. *Crenshaw*: Yellow corn from the Department a success. *Pike*: A failure in half the county; crops good in the other half. *Blount*: Excellent on high lands; inferior in low lands; good general average. *Geneva*: Crop good as could be expected or desired; the yellow corn from the Department four weeks earlier than the common varieties; can make two crops of it in a season. *Coffee*: Crop good. *Montgomery*: Good. *Calhoun*: Full average in spite of local droughts. *Marshall*: Finest crop ever raised here. *Jefferson*: Best crop in eighteen years. *Marengo*: Very poor; neither fodder nor ears to any great extent.

MISSISSIPPI.—*Grenada*: Crop fine with good culture; otherwise it is poor. *Jasper*: Corn crop made, and is light. *Cooly* corn did well. *Wilkinson*: Great rot produced by rain. *Atala*: Short crop. *Tishomingo*: Full average. *Kemper*: Shortened by wet spring and summer drought. *Lee*: Not a heavy crop, but enough to supply home demand. *Winston*: Early corn from the Department ripens earlier than any other kind; will make two crops per year. *Madison*: Not so good as was anticipated.

LOUISIANA.—*East Baton Rouge*: Corn almost a dead failure. *Arcydes*: Bad condition. *Saint Mary*: Too wet for corn. *Terre Bonne*: Too wet for corn. *Morchouse*: Extra

fine. *Franklin*: Better than for many years. *Richland*: Corn made; large crop. *Carroll*: Large crop; better than for years. *Bossier*: Hill crops fine; bottom crops injured by freshets.

TEXAS.—*Red River*: Crop greatly improved; the "Pennsylvania Early" did splendidly; ready to crib the last of July. *Victoria*: Excessive rains prevented making; crops suffering in consequence. *Polk*: Rotting badly in the fields. *Coryell*: Good condition but short. *Dallas*: Excessive rains cut down the yield to 25 or 30 bushels per acre. *Wharton*: Glowing prospect. *Burnet*: Nearly average on light, sandy soils; below average on heavy black soils; cut-worms injurious. *Rusk*: Above average. *Austin*: Rotting considerably. *Bell*: Fine; large surplus on hand. *Cooke*: Short. *Hill*: Good, but not equal to last year's crop. *Lamar*: Short; too much rain. *Matagorda*: Enough for home wants. *Marion*: Better than for years. *Medina*: Ripened prematurely. *Anderson*: Caterpillars plenty.

ARKANSAS.—*Independence*: Short. *Sebastian*: Shortened by drought. *Prairie*: Early corn filled well; late doing well. *Arkansas*: Very good. *Union*: Neglected for cotton, and hence far below average; excellent where well worked. *Marion*: Early corn suffered; late corn good; the whole about average. *Baxter*: Shortened by drought.

TENNESSEE.—*Decatur*: Half a crop. *Coffee*: With one more rain our corn crop will be the best for years. *Sumner*: Late corn suffering for rain. *Roane*: At least average. *Giles*: Average. *Putnam*: Light crop. *De Kalb*: Magnificent. *Hickman*: Late corn seriously damaged by drought. *Sullivan*: Shortened by drought, but good crops were raised by those who cultivated them intelligently. *Grainger*: Fine season and large crop. *Shelby*: Worst crop for years; not half enough realized for home consumption the coming year. *Lawrence*: Injured by drought. *Jackson*: Injured by excessive rains in June and July. *Rhea*: Prospect good; Pennsylvania Yellow ripened; ripens forty days earlier than the common varieties. *Dickson*: Good where well cultivated. *Hamilton*: Extra fine. *Smith*: Greatly improved by fine weather. *Washington*: Very promising in spite of drought. *Greene*: Splendid.

WEST VIRGINIA.—*Jefferson*: Large growth, but backward. *Mercer*: Badly damaged by grub-worms. *Pleasants*: Some crops injured by worms. *Pocahontas*: Fine. *Pendleton*: Increased growth. *Monongalia*: Quite promising. *Monroe*: Shortened by drought. *Lewis*: Too wet for corn.

KENTUCKY.—*Taylor*: Greatly shortened by drought. *Clark*: Shortened by drought. *Jefferson*: Season favorable. *Shelby*: Best average crop for five years. *Mercer*: Shortened by drought. *Edmonson*: Shortened by drought. *Lewis*: Never better. *Anderson*: Very fine crop; best since 1855. *Graves*: Worst prospect for eighteen years. *Lincoln*: Unusually good. *Logan*: Improved by late rains. *Warren*: Late plantings damaged by August drought. *Fayette*: Above average. *Owen*: Best crop since 1855.

OHIO.—*Coshocton*: Doing well, but ten days late. *Jackson*: Doing splendidly; out of danger from frost. *Logan*: Very uneven; where submerged by freshets it is likely to far exceed average crops. *Stark*: Poor stand on account of damaged seed. *Butler*: Improved rapidly; needs two weeks of good weather to ripen. *Delaware*: At least 25 per cent. below last year. *Greene*: Coming on finely, but late. *Marion*: What corn there is looks promising; needs two or three weeks' exemption from frost. *Holmes*: Full average, but will ripen late. *Vinton*: Injured by wet; earing imperfectly; some of it still weedy. *Warren*: Looks splendidly. *Mercer*: Shortened by drought. *Defiance*: Drying up on heavy clay-lands. *Athens*: Reduced below average by the destruction of some of the best crops by freshets.

MICHIGAN.—*Wayne*: Late corn suffering from drought; many pieces cut up for fodder; crop generally good. *Macomb*: First plantings generally failed. *Lapeer*: Cut-worms and bad seed caused replantings, and hence the crop is late. *Hillsdale*: Short on account of worms, bad seed, and June drought. *Jackson*: Has come forward very rapidly, and is now fit to cut. *Oakland*: Doing well on moist land, but suffering from drought on dry, sandy soils. *Ottawa*: Good growth of stalk, but ears not well filled. *Oceana*: Badly injured by drought. *Newaygo*: Suffered severely from drought. *Mecosta*: Nearly destroyed by drought.

INDIANA.—*Scott*: Considerably damaged by chinch-bugs. *Decatur*: Late corn short; chinch-bugs injurious. *Gibson*: Early plantings very good; late, in danger from frost. *Jennings*: Good on dry land, but poor on wet. *Madison*: Average on dry lands. *Morgan*: Improved; short throughout. *Noble*: With a good fall season the crop will be tolerable. *Perry*: Early plantings good. *Warren*: Greatly needs rain. *Cass*: Suffering through lack of rain. *Dubois*: Shortened by dry August. *Hamilton*: Late and liable to frost, but improves as the season advances. *Shelby*: Injured by drought. *Lake*: Full average crop in prospect. *Orange*: Late corn drying up. *Boone*: Will be short. *Brown*: Rapidly brought out by dry, warm August; promises an average. *Crawford*: Will be somewhat injured; early corn mostly made. *Newton*: Early planted corn on high lands will yield 40 bushels per acre. *Wells*: Improved through August. *Clay*: Shortened by drought. *Dearborn*: Shortened by drought. *Marshall*: Short. *Steuben*: Suffered for rain. *Owen*: Shortened by heat and drought.

ILLINOIS.—*Pike*: Light. *Crawford*: Late corn short; injured by grasshoppers.

Morgan: Early plantings good; late plantings poor. *Moultrie*: Shortened one-fourth by drought. *Sangamon*: Little good corn in the county. *Lawrence*: Suffering for rain. *Pope*: Not well worked on account of wet; in many places ruined by chinch-bugs. *Vermilion*: Seriously injured by drought. *Washington*: Shortened by drought; corn being cut for fodder. *Champaign*: Early corn poorly filled; late, a failure from drought. *Jersey*: Assessor reports 30,000 acres in corn which will not average 20 bushels. *Kankakee*: Early planted corn but little over a half crop; late, will make nothing but fodder. *Montgomery*: Shortened by drought in the north part of the county. *Marshall*: Short crop. *De Kalb*: Average. *Effingham*: Decreased acreage; three-fourths average. *Ford*: Less than a half crop probably. *Knox*: Not half a crop. *Ogle*: Shortened by August drought; not filling well. *Rock Island*: Much injured by late planting and drought. *Boone*: Stand deficient. *Lee*: Seriously damaged by drought; ear shrunk. *Winnebago*: Improved rapidly. *Richland*: Mostly out of danger. *Washington*: Did well to the middle of August, since when it was injured by drought. *Dunn*: Shortened by drought. *Piatt*: Poor, and getting worse every week. *Cass*: Two-thirds of a crop. *Mason*: Shortened by drought.

WISCONSIN.—*Waukesha*: Suffering from drought. *Dane*: A fair crop in spite of drought. *Walworth*: Corn needs a warm fall. *Portage*: Dent-corn largely ruined by drought. *Crawford*: Below average. *Clark*: Injured by grasshoppers. *Milwaukee*: Does not promise a large yield; weeds got the inside track early in the season, and have held their own.

MINNESOTA.—*Blue Earth*: Corn not earing very well. *Cottonwood*: Looks fine; will be over average. *Faribault*: Failed to fill on account of drought. *Houston*: Average, though the season was not favorable. *Jackson*: Will be average if frosts delay. *Renville*: Improving. *Jackson*: Good but not plenty. *Wabasha*: Fine corn-weather.

IOWA.—*Adair*: Mammoth corn from the Department did well. *Crawford*: Considerably damaged by grasshoppers. *Louisa*: Late corn a half crop. *Marion*: Shortened by drought. *Clinton*: Seriously injured by drought; late and almost ruined. *Montgomery*: Shortened by drought. *Polk*: Seriously injured by drought. *Pottawattomie*: Light crop through late planting and subsequent drought. *Buena Vista*: Fine growth, but needs three weeks to mature. *Harrison*: Injured in places by grasshoppers. *Calhoun*: Mostly well eared. *Chickasaw*: Suffered from drought. *Black Hawk*: Suffered from drought. *Fremont*: Shortened one-half by drought. *Jackson*: Shortened by drought. *Audubon*: Shortened by drought. *Ringgold*: Injured by drought. *Grundy*: Will be safe with two weeks more of good weather; crop choice, but less than last year. *Adams*: Shortened by drought. *Jefferson*: Badly damaged by drought. *Mahaska*: Corn-fields drying up. *Mitchell*: Where well attended, corn is excellent, and out of the way of frost. *Madison*: Seriously damaged by drought.

MISSOURI.—*Clinton*: Much of the late corn never tasseled out, some farmers cutting it for fodder. *Greene*: In some parts burnt up; on good ground and well cultivated it reaches from one-half to three-fourths of a crop. *Cass*: Greatly shortened by drought. *Jackson*: Reduced one-half by drought. *Miller*: Not even a third of a crop, through chinch-bugs and dry weather, some farmers cutting the crop into fodder. *Moniteau*: Late corn almost nothing. *Platte*: One-fourth of a crop. *Wayne*: One-third of a crop. *Polk*: Many fields will not produce five bushels per acre. *Boone*: Half a crop. *Carroll*: Greatly damaged by drought. *Jasper*: Literally drying up. *Adair*: Drying up. *Barton*: Burnt up. *Cape Girardeau*: Suffering from drought and chinch-bugs. *Crawford*: Very good; later crops injured by chinch-bugs. *Holt*: Below average. *Lawrence*: Suffered from drought, chinch-bugs, and grasshoppers. *Ozark*: Injured by drought. *Perry*: Ruined. *Ralls*: Shortened two-thirds by drought. *Nodaway*: Half crop. *Putnam*: Much old corn left. *Worth*: Below average. *Montgomery*: Greatly damaged by grasshoppers. *Phelps*: Much injured by drought. *Pulaski*: Very short. *Grundy*: Fast drying up. *Pemiscot*: Ruined by July drought. *De Kalb*: Shortened one-half by drought. *Benton*: Greatly shortened by drought. *Dallas*: Damaged by drought. *Callaway*: Half crop. *Laclede*: Shortened by drought and chinch-bugs.

KANSAS.—*Smith*: Would have been extraordinary but for the grasshoppers, which were very destructive. *Osage*: Ruined by extreme hot weather and drought. *Morris*: Surplus, though shortened by drought. *Greenwood*: Shortened by drought. *Cherokee*: Early crop, average; late, half a crop. *Butler*: Shortened by drought one-third. *Woodson*: Early plantings on bottoms largely destroyed by freshets; late planted, injured by drought; crop far below average. *Shawnee*: Almost two-fifths of a crop. *Ottawa*: Seriously injured by drought. *Dickinson*: Short crop. *Washington*: Injured by heat and drought. *Labette*: Early plantings, average; late plantings, nearly a failure. *Montgomery*: Injured by chinch-bugs. *Jefferson*: Half a crop. *Neosho*: Half a crop. *Bourbon*: Good on well-tilled, black soil; a failure on light, neglected land; injured by chinch-bugs. *Nemaha*: Suffered greatly from drought. *Miami*: Suffering for rain. *Douglas*: Drying up in some parts. *Doniphan*: In many cases will make nothing but fodder. *Coffey*: Late corn badly damaged; earlier, lighter than was antici-

pated. *Jackson*: Shortened by drought. *Lyon*: Mostly a failure; late planted. *Howard*: Shortened by drought.

NEBRASKA.—*Merrick*: Late planted, but will be 90 per cent. of an average if frost keeps off till October 10. *Richardson*: Light. *Boone*: Damaged somewhat by grasshoppers. *Washington*: Injured by grasshoppers. *Antelope*: Would have been 100 per cent. above average but for grasshoppers. *Burt*: Ruined in some places by grasshoppers. *Nemaha*: Greatly damaged by drought. *Jefferson*: Materially injured by drought.

OREGON.—*Columbia*: Short, but looks well; three weeks late.

IDAHO.—*Union*: Damaged by grasshoppers.

UTAH.—*Ada*: Late, but promising; will require four weeks to mature.

UTAH.—*Box Elder*: Has more than recovered from the cold, wet spell of May and June. *Weber*: Very weedy. *Tooele*: Will need no more irrigation, but needs warm weather to mature; Cooly corn a week or ten days later than Utah corn.

COTTON.

The present season can scarcely be deemed quite an average one for cotton; but when we recall the fact that drought, severe rains, windstorms, insects, rust—all these or most of them—are recorded of every crop that is made, it will be seen that seasons worse than the present are almost as numerous as those that are better. Should the autumn prove unusually favorable, an average yield might yet be obtained. The only drawbacks are rains and worms, the former no more destructive than severe droughts of some former years, the latter less so than in some former visitations. While caterpillars have been more abundant than last year, their ravages have been really disastrous or sweeping in few locations. There is more disposition to combat these enemies. Paris green (mixed with flour) has been used experimentally, with some success. Many people hesitate to use it for fear of poisoning, and some have used it to little purpose. These experiments, with this and other remedies, should be perseveringly continued, without any fear of infringing on patents, which can only protect an article containing certain ingredients in fixed proportions. The use of Paris green and flour, for instance, cannot be patented, as these articles have been used by tous for many years for insect extermination. It is worth while to make early, continuous, and even costly endeavor to avoid the loss of forty millions of dollars in cotton eaten by worms in a single year of insect prevalence.

The following statement will show the amount of rain-fall in the season for cultivation, upon which so much depends in cotton-growing:

States.	JUNE.		States.	JULY.	
	Average rain-fall in inches.	Number of stations reported.		Average rain-fall in inches.	Number of stations reported.
North Carolina	3.09	11	North Carolina	3.16	4
South Carolina	4.55	4	South Carolina	4.41	2
Georgia	2.13	7	Georgia	4.52	3
Alabama	7.12	4	Alabama	3.73	3
Mississippi	5.32	3	Mississippi	3.30	1
Louisiana	9.27	3	Louisiana	7.43	1
Florida	9.45	5	Florida	4.41	4
Texas	10.48	7	Texas	5.60	2
Arkansas	7.31	3	Arkansas	5.40	1
Tennessee	6.25	7	Tennessee	2.31	2

The rains of June, the season of most active efforts in keeping clear of grass, were far heavier than in that month of 1872, except in North Carolina. A comparison for July will show more rain in 1872 in all the cotton States except Georgia, Florida, Louisiana, and Texas. The following is the statement for June and July, 1872:

States.	JUNE.		States.	JULY.	
	Average rain-fall in inches.	Number of stations reported.		Average rain-fall in inches.	Number of stations reported.
North Carolina	4.13	16	North Carolina	3.98	13
South Carolina	2.52	3	South Carolina	6.18	4
Georgia	3.07	9	Georgia	3.90	7
Alabama	4.07	4	Alabama	11.15	5
Mississippi	2.84	4	Mississippi	5.42	3
Louisiana	6.69	4	Louisiana	5.88	4
Florida	6.46	6	Florida	5.36	7
Texas	6.23	12	Texas	2.35	11
Arkansas	4.53	6	Arkansas	6.96	5
Tennessee	6.00	11	Tennessee	6.56	11

During August there was also too abundant moisture for the highest condition of the crop. While some deterioration has resulted from this cause, other conditions have generally been favorable; fertilizers have stimulated growth, and labor has been steadier and more reliable than heretofore.

Our June returns of area, when averaged carefully, due weight being given to each return in accordance with the quantity of cotton produced in the county which it represents, indicates scarcely 10 per cent. of increase over the acreage of 1872. The percentage of increase in counties of small cotton area is usually larger than in the principal cotton-producing counties, making an average too high that is obtained simply by dividing the sum of percentages by the number of counties. So, in reports of condition, an average thus made may be too high or too low; the former if the small counties return the best condition, the latter if the large producers are represented by the higher figures. The only accurate expression of the true significance of our returns—and the method which we always intend to employ when great accuracy is desirable, as with the more important crops—is obtained by taking into consideration the quantity usually produced in each county, as well as the simple statement of the status of its crop. This was not done for the June and July reports, owing to the absence of the Statistician, and the reports of area and condition of cotton and other crops are, therefore, slightly inaccurate, in most cases too high, in a few too low, yet the difference is comparatively slight as to the crops whose cultivation is general.

The condition of the crop is higher than in September of last year in Arkansas, the same in Tennessee, and lower in each of the other cotton States. The averages are as follows: Virginia, 98; North Carolina, 95; South Carolina, 86; Georgia, 90; Florida, 85; Alabama, 85; Mississippi, 82; Louisiana, 80; Texas, 92; Arkansas, 93; Tennessee, 92; Missouri, 96.

For the purposes of comparison we give the September statements of condition, as recorded in the monthly reports of the Statistical Division, for the past three years:

States.	1873.	1872.	1871.
North Carolina.....	95	101	82
South Carolina.....	86	95	80
Georgia.....	90	96	78
Florida.....	85	92	75
Alabama.....	85	88	80
Mississippi.....	82	90	80
Louisiana.....	80	86	77
Texas.....	92	94	80
Arkansas.....	93	78	95
Tennessee.....	92	92	96

Cotton-fields in North Carolina generally make a fine show of vigorous and fruitful plants, the exceptions resulting more from the falling of forms and bolls, in consequence of too abundant rain-fall, than from the presence of worms. In South Carolina similar damage from excessive moisture occurs, and the caterpillars threaten a partial or total destruction of the top crop in several counties. The crop appears better in Georgia than in any other cotton State east of the Mississippi, though there is some injury from rust and heavy rains, and the caterpillar is present in force in many counties, but generally came too late to cause more than a small percentage of loss. The injury from worms and the season's vicissitudes in Florida is somewhat greater, amounting to 15 per cent. of depreciation in condition of crop. Our returns cover nearly two-thirds of the entire area in cotton on the Atlantic sea-board. The caterpillar appeared in portions of Alabama toward the last of July, but its ravages have not been serious until recently, having been held in check to some extent, in certain counties, by the use of poisons, although efforts to combat the pest have not been general. In some counties in Mississippi the plant is shedding leaves and forms from rains, in others from drought. Rust has appeared in some locations, and both caterpillars and boll-worms are doing local damage in shortening the life of the plant, without much injury to the bottom and middle crops.

The crop of Louisiana lacks uniformity, Carroll returning 100 and Caddo 40; Tensas 85 and Rapides 33. In some parishes worms have been present without doing much damage, while losses have been heavy in others. There is a similar range of condition in Texas, from very good to quite poor, though the average is much higher. Worms have appeared in many parts of Arkansas, with little prospect of damage except to the top crop. The average condition of the crop is much higher than in September of last year. Prospects are also good in Tennessee. Several counties in Missouri make returns of cotton which have never before made mention of that crop.

VIRGINIA.—*Prince George*: Rust, but the damage is not extensive. *Greenville*: Cotton will suffer if rains continue. *Surrey*: Better than ever known. *Southampton*: Injured by late rains.

NORTH CAROLINA.—*Lincoln*: Bolling unusually well; prospect flattering. *Robeson*: Looked unusually well up to August 1, since when the continuous rains have caused a shedding of fruit. *Currituck*: Has come out of the grass, and bids fair. *Sampson*: Plants of fair size, but shedding blooms and squares. The new variety of turn and triple-boll cotton that promised so much, has shed more than any other variety. *Mecklenburgh*: Injured by late rains; two weeks of dry weather will bring the crop 10 per cent. above last year's; rust in some places. *Moore*: Looks fine, though late rains have rusted it somewhat. *Chowan*: Much improved, though the late heavy rains are rusting it, and have made it shed to some extent. *Gates*: Rain causing the bolls to drop. *Lenoir*: Casting forms and rusting in some fields. *Gaston*: Good growth and fruitage: some young bolls rotting. *Hertford*: Unusual growth of weed, but the rains will make

many of the later forms to fall off. *Alamance*: Plants large; crop promising. *Bladen*: Falling on account of excessive rains of late. *Edgecombe*: Will be injured by the heavy rains; top crop shedding; boll-worm and rot reported. *Harnett*: Looks very fine where well cultivated. *Cumberland*: Rain prevented the last working of the crop, which is now shedding squares and rotting; loss variously estimated from 25 to 50 per cent. *Granville*: Slightly rusted by rain; crop good. *Pitt*: Excessive rains causing cotton to shed and rust. *Martin*: Injured in fruiting at least 30 per cent. by rains. *Rowan*: Considerably injured by rain. *Newberry*: Rain caused cotton to shed. *Franklin*: Rather too wet for cotton. *Bertie*: Rain caused shedding; growth the finest in many years; some rust. *Tyrrell*: Rains, August 10, damaged the crop, causing it to shed greatly. *Camden*: Shed badly from rain, and beginning to rust. *Beaufort*: A promising crop, injured by late rains. *Greene*: Rain shortened the season fifteen or twenty days, causing the late forms to drop, and producing rust. *Onslow*: Failed on account of rains. *Perquimans*: Crop abandoned on account of wet, cold, and lice. *Anson*: Badly rusted. *Stanly*: One of the finest crops ever known here. *Polk*: Rust has appeared in several localities.

SOUTH CAROLINA.—*Orangeburgh*: Rusted; the rain threatens to reduce the yield; caterpillars at work, but the crop is too far advanced for much injury from them. *Clarendon*: Injured by excessive rain; rust and casting of fruit very general. *Fairfield*: Increased acreage lost by lack of working; much upland cotton has taken a new growth and will be too late for fruiting. *Chesterfield*: Reduced 10 per cent. by excessive rain, causing an extensive shedding of bolls. *Marion*: Too wet for cotton; rusted on thin lands; on highly-matured lands the bolls rot as they mature. *Lexington*: Excessive rain causes too much weed and shedding of young bolls; seed from the Department show a marked superiority. *Richland*: Caterpillars all over the county; damage not yet developed. *Williamsburgh*: Much injured by rains; forms falling; caterpillars destructive. *York*: Excessive August rains caused much casting of fruit; crop declining from its first high condition. *Marlborough*: Heavy rains have brought rust and shedding of forms in sandy lands; worms destructive on bottom-lands. *Laurens*: Opened three weeks late; large growth tending to shed; worms and rot developed. *Union*: Acreage somewhat increased: more commercial fertilizers than usual; short of labor. *Edgefield*: Injured 10 per cent. by rust; due to guano.

GEORGIA.—*Lincoln*: Prospect never better; weed sufficiently large and well-fruited. *Taylor*: Rusting on sandy lands; little fruit and too much weed. *Richmond*: Injured by drought, but has grown rapidly since August; since then the frequent rains have caused the fruit to drop on bottom-lands; on gray and damp lands the crop is rusting badly. *Liberty*: Caterpillars reported, but have done but little damage. *Worth*: Too much rain for cotton; caterpillars successfully treated with poison; pretty good crop. *Carroll*: Shed forms badly; rusted to some extent. *Gordon*: Beginning to open; promises a large yield. *Schley*: Blooms falling; caterpillar injurious in some places. *Gwinnett*: Ten days later than last year; "Peeler" cotton from the Department is large, well-bolled, and promising, but it seems to be a late variety. *Dooly*: Ruined by rain and rust. *Upson*: Complaints of boll-worms on wet lands where the cotton-weed is heavy; crops average better than for several years. *Clinch*: Crop will be fine if the weather continues favorable. *Muscogee*: Weed of good size but too late in fruiting; some complaint of rust and caterpillar. *Early*: Greatly denuded of foliage by caterpillars, yet the crop will be a third greater than last year. *Wilkinson*: Caterpillars destroying late cotton. *Macon*: Weed above average size; fruitage good, with proper cultivation; only 10 per cent. worked into good condition on account of rain. *Calhoun*: Half the crop eaten by caterpillars. *Coweta*: Severely injured by drought, boll-worms, and caterpillars. *Glynn*: But little injured by either rains or caterpillars. *Baldwin*: Worms in a few fields. *Brooks*: Damaged 10 per cent. by caterpillars, rust, and shedding. *Twiggs*: Crops late, poorly fruited, and infested to some extent with caterpillars and boll-worms, besides some rust. *Wilkes*: Hot weather, causing cotton to fail rapidly. *Marion*: Boll-worm and caterpillar are ravaging the crop, especially in the fresh low lands. *Walton*: Drought telling heavily on the crop. *Lee*: Caterpillar destroyed only a few crops, but dry weather is shortening all. *Jackson*: Looks well; would yield heavily but for the grass in it; many acres abandoned on account of rain and grass. *Decatur*: Further growth arrested by caterpillars. *Jefferson*: Too wet season; rust and worms destructive. *Hard*: Best prospect for a crop since the war. *Stewart*: A third short through excessive rains, boll-worms, and caterpillars. *Whitfield*: Good. *Franklin*: Prospect reduced. *Madison*: Fertilizers reely used. *Chattooga*: Some rust.

FLORIDA.—*Liberty*: Injured by caterpillars; Paris green fails to meet the case; some say it kills the cotton as well as the insect. *Madison*: Seriously damaged by excessive rains and by insects; some say the cost of exterminators is greater than the ravages of insects. *Jefferson*: Greatly injured by caterpillars. *Taylor*: Rain caused cotton to shed. *Hillsborough*: Better than ever; average increased. *Leon*: Suffered from rain and caterpillars; half the crop eaten up. *Columbia*: Caterpillars have done but little mischief except in a few localities. The sea-island seed from Charleston fruited

well but netted badly. *Manatee*: Peleer cotton from the Department doing well. *Gadsden*: Where not denuded by caterpillars the plant tended to large fruitage, but many of the young forms were lost by excessive shedding; caterpillars are very general and destructive; weed unusually small on old lands in spite of fertilizers, but rank on new lands; bolls here rotting for lack of sunshine. *Lery*: Badly rusted. *Gadsden*: At the last meeting of our agricultural society it was the unanimous opinion of the members that all the commercial fertilizers used—of which there was quite a variety—had been a material injury to the crop, causing it to *fire*, and adding nothing to the size of the plant or to the production of fruit.

ALABAMA.—*Jackson*: Cotton brought out rapidly by dry weather in July and August. *Greene*: Cotton-worms appeared July 26, but little damage as yet; crop greatly improved. *Choctaw*: Cotton caterpillars at work; farmers hesitate about using poison. *Saint Clair*: Fine. *Lee*: Weed fine; in some places excessive rains have caused the plants to shed. *Hale*: Crop stripped by caterpillars almost as much as last year. *Barbour*: Seriously injured by caterpillars, especially on bottom-lands, where the crop lately promised so well. *Henry*: Crop fine, but caterpillars have appeared in immense numbers; a few are using poisons, with temporary success. *Clarke*: Crop fine; third crop of caterpillars are sweeping the leaves; poison is used to some extent. *Macon*: Crop seriously injured by caterpillars; but little matured cotton as yet; boll-worm also doing much damage; planters generally think the crop a failure. *Crenshaw*: Cotton-worms appeared August 20; crop average with last year; cotton-seed from the Department doing well. *Pike*: Crop very promising ten days ago, but is now being eaten by caterpillars; another week will finish it; large tracts will not make a bale to the hundred acres. *Blount*: Entirely healthy; free from insect enemies and well developed. *Coffee*: Crop never better, but the caterpillars have just appeared. *Geneva*: Very good. *Chambers*: With a good season hereafter the crop will be large; caterpillars doing but little damage, as the crop is later than usual. *Franklin*: Prospects improved; never had any caterpillars here. *Montgomery*: Blooms swept by caterpillars to some extent. *Butler*: Crop two or three weeks later than last year in fruiting, but would have done finely if the army-worm had not appeared; in spite of Paris green they will probably strip the crop. *Calhoun*: Above average. *Autaga*: Almost ruined by worms; estimates vary from one-fourth to one-third of a crop; average on manured lands. *Perry*: Stripped by bugs; gloomy prospect. *Marshall*: Rust in cotton; no general apprehension yet. *Dallas*: Caterpillars destroyed half the crop. In some cases an early application of a patented preparation of Paris green saved the crop. *Marengo*: Cotton has fallen off distressingly; worms have eaten the leaves; the bolls dropping off or opening prematurely. *Clark*: Bottom crop good; top crop eaten by worms. *Madison*: Prospect declining; dry-rot and worms. *Lauderdale*: Prospect reduced by bad weather.

MISSISSIPPI.—*Grenada*: Shedding through dry weather; where better weather exists the crop will be average; a large proportion of it badly cultivated; the character of the season imposed double labor on the crop. *Warren*: Caterpillars increasing; forms and bolls shedding on uplands. *Marion*: Third crop of caterpillars appearing; poisons in demand, but their efficacy as yet untested. *Yalabusha*: Beginning to open and doing well. *Amite*: Suffered from excessive rains. *Jasper*: Cotton making fast; two weeks late, and eaten by caterpillars. *Wilkinson*: Rotted by rain; caterpillars numerous; but little damage yet; plants shedding heavily. *Attala*: Coming to an average; well worked crops are good. *Tishomingo*: Fine cotton weather; greatly improved. *Kemper*: Injured by rust on uplands and by worms on low lands. *Lowndes*: Promising till caterpillars and boll-worms appeared; great destruction of young bolls; nearly all the fields are stripped of leaves. *Lee*: Lowlands will yield a bale per acre; highlands about one-fifth as much. *Washington*: Two weeks late; stalk large and well balled, but the worms are destroying the foliage in many cases. *De Soto*: Cotton rapidly failing. *Le Flore*: Peeler cotton fine. *Winslow*: Bottom crops about gone up through rain. *Noxubee*: Damaged 25 per cent. by leaf and boll-worms. *Rankin*: Improved 10 per cent. Caterpillar and boll-worm did but little damage; part of the crop as good as ever made; the remainder almost a failure. *Holmes*: Shedding badly on account of rain. *Jefferson*: Shortened by worms and storms; much lying flat. *Tensas*: Greatly injured by worms, and still more by the "blade-rot," especially early cotton on sandy lands.

LOUISIANA.—*East Baton Rouge*: Crops not abandoned are now doing well; plants of fine size and color, but at least three weeks late; a favorable fall will make a half crop; worms have appeared in isolated localities. *Avoynes*: Crop backward, and now being eaten by caterpillars; many using Paris green; if this remedy does not succeed there will not be a leaf left in the next ten days. *Saint Mary's*: Too wet for cotton. *Terre Bonne*: Unprecedented rain-fall, destructive to cotton. *Franklin*: Large and well balled; some boll-rot; some worms but no damage yet; with no disaster the crop will be large. *Cameron*: Better than was expected; worms not so injurious as they threatened to be a month ago. *Richland*: Worms have appeared but have done little damage. *Caddo*: Half destroyed by worms. *Iberia*: Worms spreading; not even two-thirds of a crop

Madison: Good condition and opening fast; cotton-worms in all parts of the parish, but too late to do much damage. *Union*: Cotton-caterpillar at work generally; but little damage yet. *Carroll*: Very fine where well cultivated, but the rot and caterpillars are at work reducing it to the average of last year. *Rapides*: Stripped clean of its foliage by August 20; three weeks late; wet weather threatens to rot the bolls. *Bossier*: Some crops on Red River have not a leaf left; a few on the hills badly worm-eaten. *Washington*: Looks well. *Tangipahoa*: Greater part of the crop destroyed by worms.

TEXAS.—*Anderson*: Injured 10 per cent. by caterpillars, but improved by fine weather. *Hill*: Fine. *Hunt*: greatly improved. *Lamar*: A half crop. *Washington*: Stripped by caterpillars; poison somewhat effectual. *Upshur*: Equal to last year; will be better if the season continues favorable; some rumors of boll-worms and caterpillars. *Red River*: Cotton saved from grass and weeds is growing finely and promises well. *Wood*: Some damage by worms. *Polk*: Taken by worms; rich bottom-lands will make three-fourths of a crop. *Navarro*: Will be large if not eaten by worms. *Coryell*: Better than ever before; no worms. *Montgomery*: Great efforts to kill worms; will save half the crop. *Ellis*: Better than was expected. *Caldwell*: Worms appeared, but no damage yet. *Leon*: Looks full average, but worms are in every field. *Dallas*: Never better prospect; promises of 500 pounds of lint per acre. *Wharton*: Stripped by caterpillars; nearly a total failure. *Collin*: Favorable weather bringing the crop to average. *Burnet*: Recovering; may be full average. *Lavaca*: Too wet for cotton; what escaped worms was so rank that the undergrowth rotted; late plantings all eaten by worms; a patented preparation of Paris green somewhat successful. *Rusk*: Large weeds; ravaged by boll-worms and army-worms. *Blanco*: Worms only in isolated fields. *Comal*: Crop flattering in spite of drawbacks. *Austin*: Greatly injured by worms; showers have stimulated the growth of weeds without corresponding fruitage; bottom-fields entirely stripped; uplands less severely affected. *Bexar*: Remarkably fine. *Cooke*: Short. *Limestone*: Large and beyond danger, but labor scarce to gather the crop. *Grimes*: Worms have taken the crop; some effect from arsenic and Paris green. *Liberty*: Worms destroying the crop. *Smith*: Worms destructive on red land, but not on gray land. *Fort Bend*: Shortened by worms and rains.

ARKANSAS.—*Arkansas*: Looking fine. *Union*: Worms have appeared; crop in advance of last year; weeds larger and bolls more numerous. *Saint Francis*: Injured by drought. *Hempstead*: Improved, but worms are reported. *Monroe*: Bottom and middle crops scarce, with good prospects for top crops. *Baxter*: Shortened by drought. *Prairie*: Greatly improved. *Dorsey*: Fine cotton scarce; caterpillars have appeared, but have not done much damage. *Columbia*: Still growing and blooming, three weeks late. *Crittenden*: The fine season is bringing cotton up to average, though there is some danger from frost. *Independence*: Greatly improved by late rains. *Sebastian*: Shortened by drought. *Yell*: Variant estimates of the crop; late cotton looking remarkably well. *Montgomery*: Much cotton abandoned to grass, but a larger acreage was planted; the fine weather brings it out. *Drew*: Drought injurious; some caterpillars. *Pulaski*: Injured by drought. *Ashley*: Worms increasing; leaves already stripped.

TENNESSEE.—*Fayette*: Crops improved. *Decatur*: Crop three-fourths of an average. *Roane*: Seed from the Department doing splendidly; plants 4 or 5 feet high, promising a heavy yield. *Albion*: Good. *Giles*: Not over half average. *Haywood*: Drought following heavy June rains caused a dropping of forms and a stinting of growth; fields imperfectly worked and the grass gaining ground. *Putnam*: Yield and quality both improved; crop prospects fair. *Shelby*: Somewhat improved. *Hancock*: Upland cotton from the Department is full of bolls, and 50 per cent. larger than any other cotton.

MISSOURI.—*Pemiscot*: Improved greatly in thirty days; cotton culture increasing.

KANSAS.—*Labette*: Doing finely; fully equal to any of the northern range of cotton States.

OATS.

The general average of condition of the oats crop is 92. The crop is above average—in Vermont, 100; Virginia, 103; North Carolina, 102; South Carolina, 105; Georgia, 108; Alabama, 107; Texas, 100; Arkansas, 105; Tennessee, 105; West Virginia, 105; Kentucky, 100; Minnesota, 101; Oregon, 110. In all the New England States except Vermont, and in the Middle States, the crop is under average, the deficit ranging from 26 per cent. in New Jersey to 3 per cent. in New York. In portions of these States a severe drought prevailed during the latter part of the growing season, greatly depreciating the yield. In other localities the

crop was injured by rain, producing rust and wetting the grain after cutting. In all the Atlantic coast and Gulf States the crop was above average, except Maryland, 92; Florida, 98; Mississippi, 99; and Louisiana, 96. In some portions of Louisiana the crop was prostrated by storms, thus reducing the yield, which otherwise would have been full average. The Southern inland States are all above average. In all the Northwestern States, except Minnesota, the crop was below average, the growth of the grain being unfavorably affected by the drought in many places and by heavy storms in others. West of the Mississippi the ravages of grasshoppers were very serious in this crop. Nebraska, where those ravages were especially severe, reports a crop 27 per cent. below average. On the Pacific coast California was 6 per cent. below, and Oregon 10 per cent. above average. The Schonen was the most prolific variety in Baltimore County, Maryland, where it is esteemed as a great acquisition to the farming interest. In Cape Girardeau County, Missouri, this variety grew remarkably well, but was prostrated by storms. In Curry County, Oregon, the growth was 9 feet, very thick on the ground and well filled. The potato-oats are variously reported. In Beaufort County, North Carolina, they failed entirely; in Polk and Haywood they did moderately well. In Jasper County, Mississippi, they were worthless, while in the parish of East Baton Rouge, Louisiana, they grew finely, till prostrated by storms. In Burnet County they partook of the general failure of the crop. In Hardin County, Ohio, they were affected with both rust and smut. In Morgan County, Indiana, they were three weeks later than the native varieties. In Ogle County, Illinois, they yielded 16-fold. In Smith County, Kansas, a gallon of seed produced 5 bushels. Honorable mention is also made of the Excelsior variety at several points.

VERMONT.—*Grand Isle*: Grain filled out well.

NEW HAMPSHIRE.—*Hillsborough*: Shortened by drought.

MASSACHUSETTS.—*Norfolk*: Standard quality.

NEW YORK.—*Washington*: Almost a failure. *Steuben*: Crop improved. *Chemung*: Injured by rain in harvest. *Tioga*: Suffered from wet. *Wyoming*: Greatly improved. *Otsego*: Injured by drought in June and a wet harvest. *Erie*: Late sown better than the early sown, on account of drought.

NEW JERSEY.—*Warren*: Good yield, but sometimes short-strawed. *Cumberland*: Injured by drought.

PENNSYLVANIA.—*Northampton*: Better than was expected after the severe drought, *Clearfield*: Damaged by wet weather. *Armstrong*: Extra growth of late oats. *Indiana*: Damaged by storms in August. *Tioga*: Much injured by wet. *Greene*: Injured by wet. *Warren*: Rusted during the hot, wet days of the middle of August.

MARYLAND.—*Baltimore*: Norway and other late varieties injured by heavy rains; early varieties well secured; Schonen a great acquisition, the most prolific variety here. *Howard*: Usually poor; poorer than ever if possible. *Cecil*: Quantity below average; weight rather above.

VIRGINIA.—*Bedford*: Crop fine. *Patrick*: Better than last year. *Amelia*: Lodged badly. *Shenandoah*: Very fine quality. *Campbell*: Very fine. *Spottsylvania*: Best crop for many years. *Warren*: Promise above average in spite of chinch-bugs. *King and Queen*: Much better than last year; better season. *Highland*: Good. *Prince George*: Above average.

NORTH CAROLINA.—*Chowan*: Better than usual; full crop. *Edgecombe*: Above average. *Beaufort*: Potato-oats a failure. *York*: Winter crop a failure; spring sowings up to average. *Perquimans*: Unfavorable seasons for ten years; not a paying crop. *Polk*: Four quarts of potato-oats from the Department yielded 1½ bushels. *Haywood*: Potato-oats grew finely, but it is doubtful whether they will compare with the native oats in weight.

SOUTH CAROLINA.—*Fairfield*: Spring sowing better than for several years.

FLORIDA.—*Wakulla*: Crop good, but half spoiled after cutting by rain.

GEORGIA.—*Merriweather*: Many say the oat crop is the best ever raised here. *Decatur*: Injured by rain in harvest. *Jackson*: Remarkably good.

ALABAMA.—*Blount*: Crop extra; Excelsior and potato-oats did well. *Coffee*: Good. *Geneva*: Exceedingly good. *Montgomery*: Good.

MISSISSIPPI.—*Jasper*: Potato-oats worthless.

LOUISIANA.—*East Baton Rouge*: Potato-oats did finely, but were prostrated by storms when in milk and ruined.

TEXAS.—*Red River*: Large acreage and heavy yield. *Polk*: Very small acreage; Canada oats yield 100 per cent. more than any other. *Dallas*: Red rust-proof oats yield from 60 to 75 bushels per acre. *Burnet*: Nearly a failure; potato-oats from the Department did not return the seed. *Marion*: Uncommonly fine. *Rusk*: Above average. *Montgomery*: Red or "anti-rust" oats have done well; common kinds rusted by spring rains.

TENNESSEE.—*Greene*: Fine crop. *Roane*: Very good. *Monroe*: Best crop for several years.

WEST VIRGINIA.—*Hardy*: Injured by rain in the stack. *Mercer*: Very good. *Mineral*: Considerably injured by wet. *Tucker*: Better than for twenty years. *Brook*: Sprouting in the stack. *Grant*: Very good, though sometimes harvested in bad condition.

KENTUCKY.—*Lincoln*: Injured by storms. *Anderson*: About average. *Lewis*: Full and heavy. *Fayette*: Light.

OHIO.—*Coshocton*: Better than was expected. *Washington*: Late and injured by storms. *Hardin*: Potato-oats rusty and smutty; not equal to the New Brunswick. *Stark*: Injured by rust. *Licking*: The Birnie oats did not fill. *Greene*: Generally good grain but short crop.

MICHIGAN.—*Gratiot*: Remarkably heavy. *Montcalm*: Largest yield for many years. *Lapeer*: Full average, and well filled. *Hillsdale*: Shortened by June drought. *Jackson*: Short but well filled. *Newaygo*: A little over average. *Shiawassee*: Average.

INDIANA.—*Jennings*: Very good. *Morgan*: Potato-oats three weeks later than the native varieties. *Perry*: Injured by rain. *Lake*: Fair and well secured; grain very bright and nice. *Newton*: Yield 15 to 20 bushels per acre; ordinary average 40 to 60. *Harrison*: Promised well, but were badly injured by heavy storms of rain and winds. *Brown*: Yield light. *De Kalb*: Short but good.

ILLINOIS.—*Morgan*: Badly blown down; did not fill well; light yield. *Clinton*: Largely destroyed by drought, storms, and bugs. *Boone*: Not over three-fourths average; rusted. *Winnebago*: Do not yield as well as was expected. *Wayne*: Blown down by storms. *Mason*: Good yield and quality. *Cass*: Light. *Ogle*: Decreased area; crops well secured; potato-oats from the Department yielded 2 bushels from four quarts of seed.

MINNESOTA.—*Goodhue*: Good.

IOWA.—*Lamar*: Below average. *Woodbine*: [Potato-oats from the Department destroyed by grasshoppers. *Benton*: Yield increased by fine weather. *Jackson*: Light.

MISSOURI.—*Washington*: Good crop. *Platte*: Saved in good condition. *Newton*: Half a crop. *Cape Girardeau*: Nearly ruined by winds. *Ralls*: Very fine and well harvested. *Cape Girardeau*: White Schonen and Excelsior grew well, but were so badly blown down that they could not be reaped. *Grundy*: Potato-oats a success.

KANSAS.—*Smith*: A gallon of potato-oats from the Department yielded five bushels. *Ellsworth*: Potato-oats did well.

NEBRASKA.—*Boone*: Stacked in good condition. *Washington*: In many places an entire failure; badly eaten by grasshoppers. *Burt*: Injured by grasshoppers. *Gage*: Somewhat injured by chinch-bugs. *Dixon*: Badly damaged by grasshoppers.

OREGON.—*Curry*: White Schonen oats from the Department (second crop from seed) grew 9 feet high, very thick; filled enormously, heads long and heavy; best variety grown here. *Clackamas*: Never better. *Grant*: Crop from 40 to 50 bushels per acre. *Polk*: Yield splendid.

DAKOTA.—*Clay*: Late oats destroyed by grasshoppers. *Union*: Damaged by grasshoppers. *Lincoln*: Seriously damaged by grasshoppers. *Minnehaha*: Small yield, but good quality. *Hanson*: Affected by grasshoppers.

MONTANA.—*Lewis and Clarke*: Badly damaged by grasshoppers; many fields will not be harvested.

NEW MEXICO.—*Mora*: No oats yet harvested except in irrigated land.

UTAH.—*Boxelder*: Harvest abundant; grain plump and fine.

RYE.

Rye averaged in Rhode Island, 101; Connecticut, 102; Maryland, 102; Mississippi, 100; Minnesota, 100; Kansas, 102; Nebraska, 104; and Oregon, 103; in New Jersey, 97; Pennsylvania, 99; Arkansas, 99; Ohio, 99; Michigan, 98; Wisconsin, 99; Iowa, 99; and California, 97. Of the remaining States the lowest average, 84, was in Kentucky and North Carolina. The following notes, selected from our regular correspondence, will give some idea of its local status—Delaware and Louisiana made no report of this crop:

CONNECTICUT.—*Hartford*: Unusually bright and fine.
 PENNSYLVANIA.—*Northampton*: Looks well. *Indiana*: Good quality and condition.
 NEW YORK.—*Chemung*: Injured by rain in harvest. *Albany*: Good and well secured.
 MARYLAND.—*Baltimore*: Secured in good order.
 VIRGINIA.—*Floyd*: Winter rye from Department yields twenty-fold.
 ALABAMA.—*Coffee*: Crop good.
 TEXAS.—*Burnet*: Nearly a failure. *Rusk*: Large yield.
 WEST VIRGINIA.—*Mercer*: Badly injured by the midge. *Monongolia*: Very poor.
 KENTUCKY.—*Lincoln*: Not good. *Anderson*: About average.
 ILLINOIS.—*De Kalb*: Fair. *Ogle*: Short but good; seed from the Department very satisfactory. *Boone*: Very poor.
 IOWA.—*Tama*: Below average.
 MISSOURI.—*Platte*: Saved in good condition; 75 cents per bushel.
 NEBRASKA.—*Richardson*: Good quality and condition.

BARLEY.

Barley was harvested in an average condition in West Virginia, 100; and above average in Oregon, 106. In New England it ranged from 82 in Rhode Island to 96 in Massachusetts. In New York and Pennsylvania it averaged 90, and in Maryland 93. All the South Atlantic and Gulf coast States were below average, the deficit varying from 18 per cent. in Alabama to 2 per cent. in Texas. The inland Southern States varied from 90 per cent. of an average in Kentucky to full average in West Virginia. The Northwestern States ranged from 81 in Iowa to 99 in Wisconsin. California averages 92.

NEW YORK.—*Steuben*: Injured by rain. *Chemung*: Injured by rain in harvest. *Yates*: Rain in harvest.

PENNSYLVANIA.—*Northampton*: Crop worthless through drought.

CALIFORNIA.—*Monterey*: Late-sown barley a failure; generally of good quality; crop two-thirds of last year's. *Sonoma*: Excellent condition.

POTATOES.

The average condition of this crop for all the States is 95. It is below average in all the New England States, the deficit ranging from 25 per cent. in Rhode Island to 2 per cent. in New Hampshire. In those localities affected by the drought of the latter part of summer the late plantings were very short, but at several points in Massachusetts and Rhode Island the later crops are better than the earlier ones. In the Middle States, New York is above average, while New Jersey, Pennsylvania, and Delaware are below. In several counties excessive rains rotted the crop; in others the Colorado beetle was destructive, especially in Westmoreland, Beaver, Indiana, and Lawrence County, Pennsylvania. Maryland averaged 95; Virginia 98; North Carolina 96. In South Carolina and the Gulf States the crop was average, or above, except in Louisiana and Texas. In Franklin Parish, Louisiana, it is observed that potatoes yield bountifully when proper culture has been bestowed upon them. In some counties in Texas they were injured by frost. The crop is below average in all the inland Southern States, the Colorado beetle being reported in several counties of Tennessee, West Virginia, and Kentucky. Insect injuries and unfavorable conditions of growth greatly affected the crop in many portions of the Northwest and on the Pacific coast, reducing the yield below an average. The Colorado beetle was successfully resisted in many counties by the prompt administration of Paris green and other remedies, in the use of which farmers, by experience, have acquired greater skill. In the Northern Trans-Mississippi Territories the grasshopper is reported as devouring this with other crops. In several of our reports

it is noted that Peachblow and Early Rose potatoes escaped the ravages of insects and withstood the stress of drought to a greater extent than other varieties.

MAINE.—*Waldo*: Suffering for rain. *Aroostook*: Early potatoes good and out of the way of frost. *Oxford*: Quality excellent; fair yield. *Franklin*: Suffered severely from drought.

NEW HAMPSHIRE.—*Grafton*: Early plantings look well. *Strafford*: Shortened by drought 15 per cent.

VERMONT.—*Rutland*: Promising. *Franklin*: Above average. *Grand Isle*: Greatly improved of late. *Chittenden*: First-rate.

MASSACHUSETTS.—*Norfolk*: Late varieties above average.

RHODE ISLAND.—*Washington*: Early planted nearly a failure; late a fair average.

CONNECTICUT.—*New London*: Good. *Hartford*: Never better.

NEW YORK.—*Tioga*: Rotting from wet, especially on clay or loam soil. *Kings*: Good paying crop; mostly Early Rose.

NEW JERSEY.—*Camden*: Nearly all rotted. *Burlington*: Rotted badly in low lands. *Essex*: Early plantings short; later greatly improved by the abundant rains of August.

PENNSYLVANIA.—*Northampton*: Will be a good crop if not rotted by heavy rains. *Chester*: Early plantings a light crop, with some rot; later plantings still growing with heavy tops, but are beginning to rot. *Northumberland*: Greatly improved by late rains. *Westmoreland*: Eaten by bugs. *Beaver*: Bugs destructive. *Armstrong*: Beginning to rot. *Indiana*: Late plantings swept by bugs. *Elk*: Light crop; some rot reported; bugs present, but did little damage. *Huntingdon*: Colorado beetle present, but did little yamage. *Lawrence*: Badly used up by Colorado beetles.

DELAWARE.—*Kent*: Short crop.

MARYLAND.—*Frederick*: Prospect never better. *Washington*: Weather favorable for potatoes. *Carroll*: Some rot reported. *Cecil*: Early below average; late promise well.

VIRGINIA.—*Warwick*: Benefited by late rains. *Henrico*: Early planting failed to come up; later plantings are not maturing well. *Spottsylvania*: Late plantings good. *Buchanan*: Greatly injured by rot. *Highland*: Doing well.

NORTH CAROLINA.—*Davidson*: Crop shortened by spring frosts and drought.

FLORIDA.—*Orange*: Fine weather for potatoes.

ALABAMA.—*Blount*: Best crop in ten years.

LOUISIANA.—*Franklin*: Potatoes yield bountifully with proper cultivation.

TEXAS.—*Victoria*: Killed by late frosts. *Corell*: Almost a total failure.

TENNESSEE.—*Bedford*: Crop short. *Coffee*: Late potatoes destroyed by bugs. *De Kalb*: Crop magnificent. *Monroe*: Splendid.

WEST VIRGINIA.—*Jefferson*: Colorado beetles at work. *Brooke*: Doing well. *Tyler*: Some fields injured by bugs; adjoining fields retarded. *Nicholas*: Some injury from bugs; Early Rose and Peachblow escaped.

KENTUCKY.—*Jefferson*: Late varieties injured by the Colorado beetle; Early Rose doing well. *Shelby*: Some fields failed through spring drought. *Scoto*: Colorado beetles made their first appearance, doing but little damage.

OHIO.—*Coshocton*: Full crop; bugs defeated. *Washington*: Small acreage and mostly bug-eaten. *Lucas*: A sort of blight or rot, injuring some fields; Colorado beetles have done but little damage.

MICHIGAN.—*Calhoun*: Early plantings successful; worms successfully resisted with Paris green. *Lapeer*: Best crop for many years; bug successfully resisted. *Jackson*: Promising; bugs gave same trouble, but destroyed only a few crops. *Van Buren*: Potato-bug injurious. *Mecosta*: Late potatoes nearly destroyed by drought. *Newaygo*: Have suffered severely from drought. *Occana*: Badly injured by drought. *Manistee*: Shortened by drought. *Shiawassee*: Coming in well in spite of bugs.

INDIANA.—*Scott*: Late plantings destroyed by drought and bugs. *Decatur*: Cut short one-half by bugs. *Gibson*: Early Rose good. *Perry*: Good; early plantings fine. *Warren*: Very late; bugs plentier than ever. *Cass*: In many places ruined by Colorado beetles. *Hamilton*: Shortened by drought. *Crawford*: Late potatoes almost a failure. *Harrison*: Early Rose good; late potatoes almost a failure through drought and Colorado beetles. *Clay*: Dry weather and bugs greatly injured the crop. *Dearborn*: Peachblows an entire failure. *Marshall*: Shortened by drought. *Steuben*: Shortened by drought. *Owen*: Prematurely ripened by drought.

ILLINOIS.—*Pike*: Almost a failure from drought. *Morgan*: Early plantings fair; late poor; some bugs. *Moultrie*: Short. *Sangamon*: Injured by bugs and dry weather. *Pope*: Injured by bugs, but recovering. *Putnam*: Partial failure through drought and bugs. *Carroll*: Seriously injured by drought and bugs. *De Kalb*: Under average. *Rock Island*: Nearly a failure through drought and bugs. *Lee*: About finished by rought and bugs. *Mason*: Almost a failure through drought. *Cass*: Potatoes small.

WISCONSIN.—*Chippewa*: Bugs very plenty. *Waukesha*: Suffered from drought. *Dane*: Reduced acreage; best yield for several years. *Pierce*: Much destruction by bugs. *Portage*: Peachblows, no crop; early kinds pretty good. *Milwaukee*: Good, but shortened by bugs. *Douglas*: Numerous, but late in appearing.

MINNESOTA.—*Blue Earth*: Poor through drought. *Winona*: Potatoes have not grown for six weeks on account of drought. *Sherburne*: Will be average in spite of bugs. *Nicollet*: Shortened by drought. *Stearns*: Injured by bugs.

IOWA.—*Crawford*: Injured by grasshoppers. *Louisia*: Shortened by drought. *Woodbury*: A fourth of a crop; cut short by grasshoppers. *Benton*: Injured by drought. *Calhoun*: Late potatoes, few and small. *Chickasaw*: Suffered from drought. *Marion*: Late potatoes shortened by drought. *Clinton*: Reduced three-fourths by bugs and drought. *Black Hawk*: Suffered from drought. *Montgomery*: Injured by drought. *Story*: Injured by drought 20 per cent. *Fremont*: Late potatoes only one-tenth of a crop on account of drought. *Polk*: Shortened by drought. *Pottawattomie*: Very light crop; injured by potato-bugs and grasshoppers. *Audubon*: Shortened by drought. *Ringgold*: Injured by drought. *Mitchell*: Excellent. *Jefferson*: Badly damaged by drought. *Johnson*: Shortened one-half by drought. *Madison*: Damaged by drought.

MISSOURI.—*Harrison*: Late potatoes a failure. *Saint Clair*: Late potatoes almost a failure through drought. *Boone*: Only early varieties escaped drought and bugs. *Jasper*: Late potatoes suffering for rain. *Barton*: Burnt up. *Nodaway*: Nearly ruined. *Phelps*: Late potatoes nothing. *Jefferson*: Badly damaged by drought. *Johnson*: Shortened one-half by drought. *Grundy*: No late potatoes.

KANSAS.—*Wabaunsee*: A total failure in the eastern part of the county. *Douglas*: Need rain speedily. *Miami*: Late crops perishing for rain. *Jefferson*: Early potatoes good; late ones will be a failure without rain. *Washington*: Early potatoes almost a failure; late rains make late ones more promising. *Dickinson*: Short crop. *Ottawa*: Colorado beetles very injurious. *Shawnee*: Late potatoes very poor. *Greenwood*: Late plantings will be benefited by late rains. *Morris*: Small and scarce; worth 75 cents per bushel. *Osage*: Nearly ruined by drought. *Coffee*: Late potatoes suffering for rain. *Jackson*: Poor crop, though Early Rose did well.

NEBRASKA.—*Nemaha*: Peachblows would do finely with rain; all others failures. *Cass*: Will be a failure without speedy rain. *Boone*: Damaged by grasshoppers. *Thayer*: Destroyed by bugs.

CALIFORNIA.—*Sonoma*: Large and good crop; prices low.

OREGON.—*Tillamook*: Potatoes still failing. *Columbia*: Almost ruined by rot.

DAKOTA.—*Clair*: Late potatoes destroyed by grasshopper.

SWEET POTATOES.

This crop is not cultivated in New England, and to only a limited extent in the Middle States. A few counties reported in Maryland give average of 90; all the other South Atlantic and Gulf States are above average except South Carolina 99 and Louisiana 95. Georgia is 8 per cent. above average, fifty counties being embraced. Tennessee, West Virginia, and Oregon, are average, or slightly above. All the other States are below, Missouri, the lowest, being 75.

ALABAMA.—*Blount*: Promise an extra crop. *Coffee*: Never better. *Geneva*: Good. *Montgomery*: Good.

VIRGINIA.—*Chesterfield*: Very fine. *Northampton*: Very fine.

NORTH CAROLINA.—*Gaston*: Rain causes a large growth of vines with a small growth of roots. *Cumberland*: Prospect very good. *Bertie*: Very fine.

FLORIDA.—*Wakulla*: Promising. *Jackson*: Yield large.

MISSOURI.—*Phelps*: Will make nothing at all.

TEXAS.—*Coryell*: Extra fine. *Dallas*: Very promising. *Austin*: Fine, fifty per cent better than last year.

TENNESSEE.—*Loudon*: Running to vine.

HAY AND PASTURES.

The product of hay, including all kinds, in most of the States shows an increase over the previous year ranging from 2 per cent. in Kentucky and Wisconsin to 19 per cent. in Oregon. The States below average are Vermont, 92; Massachusetts, 91; Rhode Island, 74; Connecticut, 96; New York, 74; New Jersey, 98; Mississippi, 95; Ohio, 97; Michigan, 94; Missouri, 95; Kansas, 92; California, 95. The pro-

duct of timothy, as compared with last year, ranged from 70 in New York to 118 in Oregon; the States below average being Vermont, 87; Massachusetts, 90; Rhode Island, 77; Connecticut, 95; New York, 70; New Jersey, 93; Georgia, 97; Ohio, 94; Michigan, 91; Missouri, 97; California, 91. The average condition of the crop varied within narrower limits, the maximum being, in Texas, 116, and the minimum 87, in South Carolina. In New England and the Middle States the late rains greatly improved fall pastures generally, though, in some localities, the hay-crops, not being well secured, were damaged. Grass-crops are generally satisfactory in the Southern States, though some localities in Tennessee complain of grasshoppers. In many places rain interfered with hay harvest. In Bibb County, Alabama, the only grazing or hay grass is the "Guinea" grass, which, with four cuttings, yields 4 tons per acre, and is very much relished by horses and cattle. In Comal County, Texas, cultivated pastures were very abundant in their yield. In Arkansas County, Arkansas, German millet has been cultivated with marked success, yielding 2 tons per acre with a single cutting, and a heavy subsequent growth of pasture. This grass yields from 2 to 4 tons per acre in Coffee County, Tennessee, where it promises to revolutionize grass culture entirely. Pastures are variously reported in the Northwest; in some places they were shortened greatly by drought and grasshoppers; in others the abundant and seasonable rains have made them very luxuriant. Complaints of drought are more numerous east of the Mississippi, while to the westward the grass-crops were generally large, but in very many cases were destroyed by grasshoppers. The farmers of Sacramento, California, had a busy alfalfa harvest.

MAINE.—*York*: Good hay-crop, well secured; fields and pastures green. *Aroostook*: Hay light but good.

NEW HAMPSHIRE.—*Carroll*: Pastures good. *Sullivan*: Hay better than was expected six weeks ago. *Hillsborough*: Hay greatly brought out by late rains; fall feed abundant.

VERMONT.—*Franklin*: Crop average and in fine condition. *Addison*: Pasture very short. *Chittenden*: An unusual number of farmers plowing up their old meadows and reseeded them with timothy and clover on the sward; they do not try any other crop.

MASSACHUSETTS.—*Norfolk*: Rains have greatly improved the meadows. *Dukes*: Meadows and pastures reviving from the drought.

CONNECTICUT.—*New London*: Hay short but excellent; fine prospect of after-feed.

NEW YORK.—*Washington*: Hay-crop better than was expected; quality good, improved by August rains. *Steuben*: Pastures flush; second crop of clover unusually large. *Cattaraugus*: Hay-crop short; deficiency will be supplied with broadcast corn-fodder. *Warren*: Pastures good; meadows fresh. *Columbia*: Fall pastures good. *Madison*: After-growth of meadows very fine; corn largely broadcasted for fodder. *Genesee*: Fall feed growing finely. *Jefferson*: Pastures have greatly improved. *Seneca*: Hay secured in better condition than last year. *Sullivan*: Surprising yield of hay; secured in excellent condition.

NEW JERSEY.—*Warren*: Timothy-hay a good yield; clover poor. *Cumberland*: Hay half a crop, but better than last year. *Sussex*: Late-cut bottom-hay abundant; upland grasses deficient. *Gloucester*: Pastures green and flush as in June. *Monmouth*: Fall pastures promise finely. *Hudson*: Pastures yielding abundantly; hay-crop shortened by earl drought. *Burlington*: Pastures growing rapidly. *Essex*: Injured by drought, but secured in good condition.

PENNSYLVANIA.—*Northampton*: Hay-crop shortened by drought. *Beaver*: Hay generally secured in good order; pastures grassy but wet. *Cumberland*: Fall pastures good. *Armstrong*: Extra growth of pasture. *Lycoming*: Hay, both clover and timothy, very good. *Lawrence*: Pasture greatly improved by late rains. *Elk*: Hay injured by excessive rains.

MARYLAND.—*Carroll*: Pasture abundant; clover drowned out in some cases. *Talbot*: Grass growing rapidly. *Montgomery*: Recent rains have brought out clover and pastures very finely. *Cecil*: Good quality, but below the average yield.

VIRGINIA.—*Fluvanna*: Clover light; bad stand obtained last year; timothy, a fair crop. *New Kent*: Pasturage greatly improved. *Rockingham*: Pastures splendid. *Fairfax*: Fall pastures better than for five years. *Spottsylvania*: Hay-crop very large. *Surry*: Recent rains good for the pastures. *Halifax*: Pasturage good. *Grayson*: Hay-crop

secured in fine condition. *Highland*: Unusually good yield of hay. *Loudoun*: Fall pasture fine. *Prince George*: Hay-crop above average.

NORTH CAROLINA.—*Davidson*: Grass-crops recovered by late rains from former drought. *Chowan*: Rain rendered it difficult to save hay. *Cumberland*: Hay prospect very good. *Bladen*: Looks well.

GEORGIA.—*Heard*: Grass and pastures fine. *Jefferson*: Grass-crops never better.

ALABAMA.—*Bibb*: Guinea-grass the only kind growing here; yields 4 tons per acre good hay; cut four times a year and is very satisfactory as food for horses and cattle. *Coffee*: Grass-crops good. *Montgomery*: Hay-crop good. *Ellis*: Hay-crop the best ever made; prairie grass, mesquite, &c.

TEXAS.—*Red River*: Hay of all kinds never better. *Coryell*: Better than ever before. *Collin*: Great increase of prairie-hay. *Comal*: Hay-crop large. *Austin*: Prairie pasture excellent; artificial pastures produce abundance of hay; crab-grass full 3 feet high.

ARKANSAS.—*Arkansas*: Hay good. *Crittenden*: German millet produces 2 tons of hay per acre, the second crop being pastured. *Washington*: Increased sowing of timothy.

TENNESSEE.—*Rhea*: Grass-crops good. *Hamilton*: Clover and timothy short. *Washington*: Hay would have turned out well but for heavy freshets. *Bradley*: Grass-crops injured by grasshoppers. *Coffee*: Hay-crop greatly increased by the large quantity of German millet lately sown; this grass brings from 2 to 4 tons per acre, and promises to revolutionize the grass culture to the north and south. *Sumner*: Large and superior hay-crop well saved. *Obion*: Grass good. *Giles*: Best hay-crop ever made; first-rate condition. *De Kalb*: Grass crops magnificent. *Monroe*: Hay of all kinds average or above. *Putnam*: Fine quality and full average quantity. *Hancock*: Pastures eaten by grasshoppers.

WEST VIRGINIA.—*Jefferson*: A good deal of fox-tail hay made. *Marion*: Fall pastures fine and rank; blue-grass springing where it appeared to be killed with grub-worms. *Mercer*: Full average and in good order. *Pocahontas*: Large and fine crop. *Pendleton*: Beautiful prospect for fall pastures. *Grant*: Haying delayed by rains; corn double loss. *Monongalia*: Hay-crop short.

KENTUCKY.—*Clarke*: Grass burning up. *Jefferson*: Favorable season. *Lincoln*: Meadows largely winter-killed; hay-crop well secured. *Lewis*: Hay remarkably good. *Hardin*: Pastures very short.

OHIO.—*Coshocton*: Good crop well secured. *Jackson*: Fall pastures never better. *Logan*: Some early-cut clover swept away by a freshet; in one case a mowing-machine was just visible above water. *Stark*: Hay-crop damaged by drought. *Athens*: Hay of all sorts better than last year, but much of it has been destroyed by floods; it is worth from \$16 to \$20 per ton. *Medina*: Grasshoppers destructive on pastures.

MICHIGAN.—*Shiawassee*: Hay shortened by drought, but of fine quality. *Calhoun*: Early-cut hay injured by showers. *Kalamazoo*: Pastures nowhere; scarcely anything for stock to eat. *Newaygo*: Hay full average. *Van Buren*: Grass seriously affected by drought.

INDIANA.—*Decatur*: Hay saved with difficulty; clover-hay principally lost. *Jennings*: Grass very good. *Morgan*: Above average. *Switzerland*: Hay light and inferior; meadows foul. *Cass*: Pastures suffering for rain. *Lake*: Fine harvest weather; splendid crop of hay secured in good condition. *Crawford*: Fall pastures very short. *Owen*: Clover-hay abundant; timothy three-fourths of a crop. *Clay*: Pastures dry enough to burn.

ILLINOIS.—*Pike*: Pastures all dried up. *Crawford*: Injured by grasshoppers. *Clinton*: Hay short but good. *Pope*: Hay our only good crop. *Carroll*: No after-maths for hay; pastures dried up. *De Kalb*: Hay 5 per cent. below average. *Knox*: Hay short; pastures burned up. *Marshall*: Pastures very nearly used up. *Warren*: Pastures dried up, and some farmers feeding green corn. *Edwards*: Badly injured by grasshoppers; meadows partly saved by wet weather, but the quality of the hay was not good; pastures good. *Boone*: Very light timothy crop. *Cass*: Hay light. *Mason*: Good yield and quality.

WISCONSIN.—*Waukesha*: Suffered from drought. *Dane*: Clover-hay short. *Dodge*: Pastures dried up. *Richland*: Summer pasture badly dried up; meadow fall-feed poor. *Dunn*: Weather favorable for hay harvest. *Outagamie*: Pasture literally burned up. *Green*: Hay-crop generally short.

MINNESOTA.—*Waseo*: Timothy-crop heavy. *Goodhue*: Hay good but somewhat reduced by the winter-killing of clover, and by damage to wild grass by high water. *Murray*: Hay poor; natural grasses never better. *Meeker*: Abundance of wild hay, rather above average in quality, but not equal to average in quantity.

IOWA.—*Lee*: Pastures dried up. *Harrison*: Hay mostly from prairie-grass, and is not so good as usual. *Blackhawk*: Tame hay excellent; wild hay above average. *Clinton*: Hay-crop large, but no after-feed in meadows or pastures. *Marion*: Pastures suffering for rain. *Jefferson*: Pastures dried up. *Mahaska*: Pastures drying up. *Johnson*: Pastures dried up.

MISSOURI.—*Washington*: Good hay-crop; young clover nearly killed out by drought; pastures dried up. *Audrain*: Pastures nearly all dried up. *Cass*: Timothy and clover hay fine; prairie-hay shortened by drought. *Greene*: Meadows and pastures brown. *Moniteau*: Pastures burned up. *Platte*: Pastures dry enough to burn. *Newton*: Hay half a crop; grass eaten by insects. *Lincoln*: Timothy and the first clover-crop were fine, having matured before the drought; much clover killed by drought. *Adair*: Pastures drying up. *Callaway*: Grass short and dried up.

KANSAS.—*Cherokee*: Hay-crop gathered and largely baled and shipped. *Poulter*: Hay a large crop, and secured in good order. *Labette*: Hay a fine yield; 50 per cent. more than any previous yield, and of excellent quality. *Bourbon*: Timothy doubtful without speedy rain.

NEBRASKA.—*Gage*: Grass dry enough to burn; hay scarce.

CALIFORNIA.—*Sacramento*: Farmers busy in making hay of alfalfa. *Alameda*: Pastures shortened by drought.

DAKOTA.—*Hanson*: Hay-crop fine.

FRUIT.

The severity of the last winter has shown its destructive results in the shortness of all the fruit-crops. In a few counties insect injuries are noted by our correspondents; but these pests appear to have found but little scope for their ravages in the stunted growth of the crops. A scarcity and inferiority of fruit is a chronic complaint in our correspondence.

Apples.—But one State, Oregon, reports an average crop of apples. The condition of the crop ranges from 28 in Rhode Island to 102 in Oregon. Of the New England States the highest average, 61, is presented by Vermont. The Middle States range from 75 in New York to 50 in Pennsylvania; the South Atlantic coast States from 40 in South Carolina to 84 in Virginia; the Gulf States from 71 in Texas to 83 in Louisiana; the interior Southern States from 30 in Tennessee to 80 in Arkansas; the States north of the Ohio from 40 in Illinois to 78 in Michigan; the States west of the Mississippi from 57 in Kansas to 87 in Nebraska; California reaches 83. Many counties, in different parts of the country, report an entire failure of the crop.

Peaches.—This crop is, if possible, in a worse condition than the apples. Here, again, Oregon is the only State in which an average crop is reported. The State averages range from 18 in South Carolina to 122 in Oregon; in the former 11 counties, and in the latter 6 counties reported. Maine, Vermont, Wisconsin, Minnesota, Iowa, and Missouri make no reports from any of their counties, the crop being too inconsiderable to attract attention. Two counties in New Hampshire average 92, 2 in Rhode Island 87, and 19 in California 85. Of the remaining States only 11 are above 50, viz: Connecticut, 60; Delaware, (1 county,) 75; Virginia, 77; North Carolina, 54; Georgia, 60; Florida, 65; Alabama, 71; Mississippi, 70; Louisiana, 68; Arkansas, 61; Nebraska, 52; Pennsylvania, 20; South Carolina, 18; Ohio, 25. In this crop, also, many counties report the entire destruction of the crop. There is also a general complaint of imperfect fruitage.

Grapes.—The general tone of our grape reports is much higher than either apples or peaches, yet it is sufficiently discouraging. The highest condition is reported in Connecticut, 103; New Jersey, 101; Rhode Island, 100; New Hampshire, 99; Louisiana, 98; Mississippi, 97; Florida, 96; Nebraska, 95; New York, 94; Massachusetts, 92. The lowest averages are found in South Carolina, 46; Pennsylvania, 58; Maryland and Tennessee, 58; Ohio, 61. The Clinton grape in Lehigh County withstood the winter well; all others, unprotected, were winter-killed. Scuppernong grapes were killed by April frost in Darlington district, South Carolina, but immediately fruited

again, producing one-third of an average crop. In Pulaski County, Illinois, Concord grapes rotted worse than any other.

Apricots.—An apricot tree in Somerset County, Maryland, netted \$102 over and above the cost of marketing.

MAINE.—*York*: Apples small and badly stung. *Piscataquis*: Apples blown off by the gale of August 24. *Lincoln*: Apples reduced by a heavy gale. *Oxford*: Light and poor.

NEW HAMPSHIRE.—*Grafton*: Apples almost a failure. *Carroll*: Apples a failure. *Sullivan*: Apples a failure. *Strafford*: Grapes injured by rose-bugs. *Cheshire*: All kinds of fruit scarce.

MASSACHUSETTS.—*Norfolk*: Apples and peaches poor; grapes good, but short. *Plymouth*: Apples scarce and dropping.

RHODE ISLAND.—*Kent*: This being the unbearing year, apples are almost a total failure.

CONNECTICUT.—*New London*: Fruit poor.

NEW YORK.—*Steuben*: Grapes maturing finely; crop 25 per cent. ahead of last year. *Ontario*: Apples and peaches short. *Wyoming*: Apples short; grapes better than usual. *Otsego*: Apples a very light crop. *Genesee*: Apples not plenty, but good. *Seneca*: Fruit injured by late frosts.

NEW JERSEY.—*Warren*: Apples fine, but few; peaches almost an entire failure, especially on low lands; grapes fine in quantity and quality.

PENNSYLVANIA.—*Northampton*: Apples, pears, and quinces a general failure. *Berks*: Peaches and grapes entirely failed. *Cumberland*: Apples and peaches scarce. *Lehigh*: The Clinton grape withstood the winter pretty well; all others, unprotected, were winter-killed. *Northumberland*: Apples few, but good; no peaches. *Beaver*: But little fruit of any kind.

DELAWARE.—*Kent*: Peaches much better than was expected before ripening.

MARYLAND.—*Baltimore*: Summer-apples dropping; winter varieties improved. Wet weather will, perhaps, injure grapes. *Howard*: Very few peaches. *Calvert*: More peaches marketed than ever before. *Cecil*: Apples very few and inferior.

VIRGINIA.—*Bedford*: Grapes rotting seriously. *Lunenburg*: Apples injured by worms to an unusual extent. *Amelia*: Grapes rotting badly; peaches injured by late rains, becoming very insipid. *Halifax*: Fruit rotted badly; very little dried for market. *King George*: Fruit fine, but late rains have rotted the peaches and grapes somewhat. *Buchanan*: Peach-crop an entire failure. *Mecklenburgh*: Apples and peaches falling badly. *King William*: Apples and grapes rotting. *Rockingham*: Fruit of all kinds good. *Warren*: Grape-crop good where not damaged by late rains.

NORTH CAROLINA.—*Davidson*: Very little good fruit; peaches better than apples. *Chowan*: Grapes not half a crop. *Alamance*: Peach-crop small and rotting badly; dried-peach shipments only 100,000 pounds against 500,000 last year. *Harnett*: Very little fruit. *Burke*: Apples nearly a failure; peaches never fail—a full crop of delicious fruit. *Princess Anne*: A farmer sold \$535 worth of apples from 27 trees. *Northampton*: Fruit-crop short.

GEORGIA.—*Taylor*: All grapes, except the Scuppernong, rotting and rusting; peaches rotting. *Gwinnett*: No apples or peaches, except in a few localities, and those quite inferior. *Walton*: Peaches rotted badly. *Whitefield*: Peaches and apples have dropped off badly.

FLORIDA.—*Manatee*: Oranges 5 per cent. less than last year on account of heavy rains.

ALABAMA.—*St. Clair*: Peaches not good; apples rotting. *Blount*: Excellent crop of apples; peaches inferior in quantity and quality. *Geneva*: Fruit-crops poor. *Calhoun*: Fruit almost an entire failure.

LOUISIANA.—*Richland*: Pears fine; early varieties destroyed by frosts: some blight; Bartlett's unusually fine.

TEXAS.—*Victoria*: Heavy crop of fine peaches; grapes excellent; many vines just coming into bearing. *Polk*: Fruit an entire failure. *Uvalde*: Fruits largely destroyed by frost. *Titus*: Injured by storms and frost, but of superior quality. *Atascosa*: Peaches destroyed by grasshoppers. *Austin*: Peaches of larger size than usual, but greatly injured by worms and rains.

ARKANSAS.—*Arkansas*: Apples and peaches rotting and falling off; pears excellent. *Marion*: Apples and peaches winter-killed. *Washington*: Grapes mildewed.

TENNESSEE.—*Decatur*: Fruits an entire failure. *Smith*: Apples, peaches, and grapes nearly a failure. *Greene*: Apples a failure; a few good peach-crops. *Coffee*: Fruit destroyed by spring frosts. *Haywood*: Apples destroyed by caterpillars.

WEST VIRGINIA.—*Mercer*: Apples and peaches scarce. *Pleasant*: Grapes rotting badly. *Pocahontas*: Peaches almost a failure. *Brooke*: Apple-trees injured by the borer; grapes by dry-rot. *Nicholas*: No apples or peaches. *Boone*: The few peaches that escaped winter frosts have dropped off; apples affected with bitter-rot are falling off.

KENTUCKY.—*Jefferson*: Apples good; pears small crop, trees much blighted; peaches few and imperfect; grapes good in some localities and a failure in others. *Nicholas*:

Fruit scarce and defective. *Spencer*: Peaches and apples inferior and tending to decay. *Larue*: But little fruit. *Lewis*: Apples not so plenty as last year, but better; peaches fair, but not plenty; grape-crop large, but half rotten. *Breckinridge*: Apples and peaches almost a failure, rotting and dropping before maturity. *Logan*: Peaches rotting. *Anderson*: Fruit abundant.

OHIO.—*Hardin*: Peaches and grapes failures; a few Clintons in towns doing well. *Ross*: Apples badly stung and falling off; peaches almost a failure; grapes injured by wet. *Meigs*: Peaches rotting badly; apples and grapes ditto. *Mercer*: Fruit-crop light and inferior. *Defiance*: Many fruit-trees dying, apples, pears, and all the quinces. *Gallia*: Grapes good, but small crop. *Athens*: Apples inferior, rusting and rotting; grapes unusually good. *Lucas*: Peaches an entire failure.

MICHIGAN.—*Calhoun*: Grapes good; pears a fine crop; blight affected the standard varieties, except Seckel, Buerre Diel, Clairgau, White Dozenne, &c. *Montcalm*: No peaches; very few apples; many fruit-trees dying through injuries from last winter's cold. *Macomb*: Peaches an entire failure. *Lapeer*: Apples and grapes good. *Oakland*: Apples falling from the trees.

INDIANA.—*Noble*: No peaches; apples generally good. *Perry*: Grapes rotted badly before ripening. *Ripley*: Apples few and imperfect; no peaches and few pears. *Hamilton*: Crop short; much bitter-rot. *Lake*: Apple-crop very small. *Orange*: Apples and peaches almost failures. *Crawford*: Apples and peaches almost entire failures. *Newton*: Very small crop of apples; grape-vines that escaped winter-killing are full of fine fruit. *Clay*: Few apples and no peaches.

ILLINOIS.—*Cass*: Apples almost a failure; peaches entirely so; few grapes. *McLean*: Apples poor; grapes fine and sweet; old vineyards badly winter-killed. *Pike*: Apples a half crop; cherries almost a failure except Early Richmonds. *Morgan*: Most varieties of apples failed; peach-trees mostly winter-killed; Concord-grapes a light yield; most other varieties killed. *Putnam*: Apples almost a failure. *Ottawa*: Apples scarce; grapes recovering from winter-freezing and nearly average, though late; peach, pear, and quince trees away from the lake shore mostly winter-killed; one-tenth of the apple-trees killed. *Pulaski*: Concord grapes rotted badly; other varieties not so bad. *Wayne*: Few apples and no peaches or grapes.

WISCONSIN.—*Juneau*: Cranberries abundant, especially where cultivated. *Chippewa*: Apple-trees badly killed. *Milwaukee*: Apple-crop short.

MINNESOTA.—*Goodhue*: Apples and grapes show the sad effects of last winter; trees dying all summer; apples few and poor.

IOWA.—*Harrison*: Apples and grapes greatly reduced by grasshoppers, which killed many of the young trees. *Louisa*: Apple-crop short, but good. *Benton*: Apples injured by worms. *Blackhawk*: Fruit of all kinds short; if frost delays, grapes will be a tolerable crop. *Polk*: Apples almost ruined by heavy storms. *Outagamie*: Apples a failure; fruit of all sorts very light. *Green*: Fruit first-class in quality, but only a fourth of a crop. *Crawford*: Apples, grapes, and other fruit almost a total failure. *Ringgold*: Fruits shortened by drought. *Linn*: Grapes nearly a failure; apple-trees dying all summer from the effects of last winter's freezing.

MISSOURI.—*Cass*: Peaches a failure; apples more or less wormy. *Harrison*: Peaches an entire failure; grapes doing well. *Platte*: Apples almost a failure as to quality; many young orchards killed by grasshoppers. *Newton*: Apple-crop light; no peaches of consequence; grapes badly injured by insects. *Boone*: Apples almost a failure. *Daviess*: Peaches a failure. *Perry*: The few apples that remain are rotting and falling off. *Shelby*: Many apple-trees killed by winter-freezing; grapes almost a total failure from same cause. *Taney*: Peaches a failure. *Pettis*: The twigs of nearly all apple-trees have died about eight inches from their ends; Jeanettons suffering most; Bell-flowers entirely exempt. *Pulaski*: Apples suffering from dry or bitter rot; peaches winter-killed; grapes not a success. *Dallas*: Apples inferior; not a peach. *Cataway*: No peaches; few apples. *Laclede*: Peaches killed; apples one-fourth of a crop.

KANSAS.—*Doniphan*: Fruit-crops poor. *Lincoln*: Peaches killed in the bud by cold weather. *Woodson*: Fruit almost a failure; grapes destroyed by rose-bugs. *Osage*: Very few peaches; apples scarce; grapes falling from the bunches. *Douglas*: Apples less than half a crop; no peaches; fruit-trees blighting. *Jackson*: Apples injured by worms.

CALIFORNIA.—*Napa*: Apples and pears failed to bud; peaches and grapes killed by frost. *Nevada*: Apples abundant, but all other fruits injured; mildew in grapes. *Sonoma*: Grapes in better condition than was supposed. *Amador*: Peaches and grapes injured by late frosts. *Contra Costa*: Grapes fine, but a third short. *El Dorado*: Peaches very fine; many weigh over a pound each; grapes good.

OREGON.—*Douglas*: Peach-crop injured by late frosts; grapes injured by the same. *Linn*: Apples better than last year; no peaches; plums scarce, the trees becoming unhealthy and the fruit stung by the curculio for the first time. *Grant*: Fruit-trees generally quite young; fruit-culture becoming more successful, especially peach-culture; orchards of 5,000 trees to be found. *Clackamas*: Apples 50 per cent. above average; peaches good; grapes 25 per cent. below average.

UTAH.—*Beaver*: Frost in May killed all the peach and 80 per cent. of the apple bloom. *Salt Lake*: Apples seriously damaged by worms; fruit small and ill-tasted.

SUGAR-CANE.

Two counties in South Carolina report the condition of this crop 5 and 10 per cent. above average, respectively; 18 counties in Florida average 98; 21 in Georgia average 108; 7 in Alabama, 114; 6 in Mississippi, 96; 10 in Louisiana, 95; 15 in Texas, 96.

FLORIDA.—*Orange*: Fine weather for sugar-cane. *Jefferson*: Crop good. *Wakula*: Good; ratan-cane winter-killed. *Jackson*: Doing well. *Leon*: Doing well. *Leon*: Good. *Gadsden*: Sugar-crop large.

GEORGIA.—*Glynn*: Recent rains very favorable for cane, which is very promising. *Brooks*: Good.

ALABAMA.—*Geneva*: Good crop.

LOUISIANA.—*St. Mary*: Rainy weather favorable to cane-crop. *Terrebonne*: Plant-cane good; stubble bad. *Iberia*: Cane excellent and growing rapidly. *Rapides*: Fair average; but little stubble-cane.

TEXAS.—*Polk*: Average decreased one fourth. *Gillespie*: Red and black seeded: African cane in good order; the second seed.

TOBACCO.

The general average for tobacco in September was about 90. This crop was above average in Georgia, Florida, Alabama, Texas, and Tennessee, and average in West Virginia. In New England the crop was 82 in Massachusetts and 90 in Connecticut. In the former State it ripened two weeks earlier than usual in some places. In Pennsylvania and Maryland it was seriously injured by late rains, very greatly reducing its condition and yield. The same causes operated in Virginia and North Carolina, though to a less extent. In many counties the planting was very late, but with good fall weather the farmers expected to make a good crop. In Gadsden County, Florida, the cultivation of Cuba tobacco has become quite extensive. In the Gulf States and Tennessee the crop was quite successful, but in the Northwestern and Pacific States the crop was below average generally.

NEW HAMPSHIRE.—*Grafton*: The few tobacco-fields look well.

MASSACHUSETTS: Earlier than usual by two weeks; will probably escape frost; some pieces ruined by a hail-storm August 23.

NEW YORK.—*Wayne*: Heavy crop; weather very seasonable.

PENNSYLVANIA.—*York*: Crop improving; may yet reach an average.

MARYLAND.—*Charles*: Seriously injured by late rains. *Howard*: Greatly benefited by recent rains.

VIRGINIA.—*Charlotte*: Crop late and cannot come up to an average. *Bedford*: Much damaged on bottom-lands by high water. *Lunenburg*: Suffered much from unfavorable weather. *Amelia*: Seriously affected by hot, wet weather; looks as if sprinkled with boiling water. *Nelson*: Late and irregular. *Campbell*: Late, owing to scarcity of plants. *Orange*: Late, but growing finely; will reach an average if the fall be fine. *Pittsylvania*: Generally poor; planting season unfavorable. *Halifax*: Somewhat improved; crop late; horn-worms destructive. *Buckingham*: Plants large but injured by excessive wet in low grounds and fired on high grounds; much of the crop will be entirely lost. *Mecklenburgh*: Much improved by August rains.

NORTH CAROLINA.—*Caswell*: Improved by late rains but needs a favorable fall to mature. *Person*: Much improved by August rains and will make a full yield; acreage decreased on account of drought and scarcity of plants. *Alamance*: Unpromising; poor stand obtained. *Yadkin*: Much improved by late rains.

FLORIDA.—*Gadsden*: Large crop of Cuba tobacco.

TEXAS.—*Austin*: Second cut hardly inferior to the first.

TENNESSEE.—*Obion*: Very good. *Monroe*: Good.

WEST VIRGINIA.—*Mercer*: Below average, but improving.

KENTUCKY.—*Logan*: Bids fair for a superior crop. *Edmonson*: Materially shortened by drought. *Lewis*: Largest acreage and yield ever known. *Graves*: Finest prospect in eighteen years.

INDIANA.—*Spencer*: Injured first by excessive rain and then by drought.

MISSOURI.—*Lincoln*: Greatly shortened by drought.

Table showing the condition of the crops, &c., on the 1st day of September, 1873.

States.	CORN. Average con- dition Sep- tember 1.	WHEAT. Average con- dition when harvested.	RYE. Average con- dition when harvested.	OATS. Average con- dition when harvested.	BARLEY. Average con- dition when harvested.	BUCK- *WHEAT. Average con- dition Sep- tember 1.	POTATOES. Average con- dition Sep- tember 1.	POTATOES. (Sweet.) Average con- dition Sep- tember 1.	TOBACCO. Average con- dition Sep- tember 1.	COTTON. Average con- dition Sep- tember 1.	HAY.		
											Product of tim- othy compared with last year.	Average con- dition of tim- othy when harvested.	Product of hay of all kinds compared with last y.
Maine.....	87	83	92	84	92	98	88	.....	.....	.....	103	105	105
New Hampshire.....	100	95	95	94	90	102	98	.....	93	.....	104	105	107
Vermont.....	90	96	96	100	97	100	91	.....	.....	.....	87	99	92
Massachusetts.....	99	102	98	95	96	92	95	.....	82	.....	90	100	91
Rhode Island.....	96	.....	101	90	92	.....	75	.....	.....	.....	77	105	74
Connecticut.....	95	104	102	81	92	91	99	.....	90	.....	95	110	96
New York.....	90	72	96	97	90	103	102	.....	.....	.....	70	93	74
New Jersey.....	104	105	97	74	.....	90	63	90	.....	.....	93	87	98
Pennsylvania.....	87	102	99	81	90	100	92	94	77	.....	100	90	100
Delaware.....	94	85	.....	80	.....	100	50	50	.....	.....	105	83	120
Maryland.....	94	96	102	82	93	101	95	90	70	.....	103	97	110
Virginia.....	99	83	93	103	.....	101	98	100	80	98	108	104	110
North Carolina.....	99	82	85	102	.....	101	96	101	80	.....	104	98	105
South Carolina.....	95	75	94	105	90	.....	102	99	.....	86	.....	87	104
Georgia.....	103	75	90	108	97	100	103	108	107	90	97	102	107
Florida.....	94	85	85	107	82	.....	104	105	100	85	.....	100	103
Alabama.....	94	85	.....	.....	.....	.....	102	101	106	.....	102	.....	102
Mississippi.....	87	90	100	99	101	.....	100	101	.....	82	.....	100	95
Louisiana.....	90	.....	.....	96	.....	.....	96	95	.....	80	.....	.....	104
Texas.....	80	85	95	100	98	94	91	111	104	92	110	116	113
Arkansas.....	93	95	99	105	.....	.....	95	97	100	93	103	99	117
Tennessee.....	80	78	105	.....	97	98	99	101	102	92	106	100	112
West Virginia.....	105	91	88	105	100	103	89	100	97	.....	102	100	103
Kentucky.....	94	85	90	100	90	98	90	97	93	.....	102	98	102
Ohio.....	91	97	99	.....	95	96	88	94	100	.....	91	95	97
Michigan.....	84	90	98	97	90	90	99	.....	.....	.....	91	100	94
Indiana.....	87	84	98	.....	92	86	86	94	101	.....	106	99	107
Illinois.....	87	83	95	87	92	86	86	94	.....	90	91	100	92
Wisconsin.....	68	93	91	95	83	90	63	84	90	.....	103	103	102
Minnesota.....	89	107	99	88	99	92	87	.....	102	.....	110	106	108
Iowa.....	100	105	100	101	90	98	92	.....	.....	.....	110	105	109
Missouri.....	81	100	99	97	81	82	60	78	82	96	97	101	95
Kansas.....	67	100	96	95	93	65	67	75	90	96	101	99	92
Nebraska.....	63	100	102	92	95	60	52	91	95	.....	101	101	103
California.....	63	107	104	73	96	73	48	88	.....	.....	101	96	95
Oregon.....	97	92	97	94	106	98	104	104	86	.....	118	100	119
	102	107	103	110	.....	91	100	.....	.....	.....	.....	.....	.....

Table showing the condition of the crops, &c.—Continued.

States.	BEANS.	SORGHUM.	SUGAR-CANE.	HOYS.		STOCK HOGS.		WOOL.	APPLES.	PEACHES.	GRAPES.
	Average condition Sep. 1.	Average condition Sep. 1.	Average condition Sep. 1.	Acreage compared with last year.	Average condition Sep. 1.	No. for fattening compared with last year.	Average condition as to size.	Wt. of fleece compared with an average crop.	Average condition Sep. 1.	Product compared with an average.	Average condition Sep. 1.
Maine.....	88	.....	.....	105	57	98	100	100	65	.....	85
New Hampshire.....	99	.....	.....	102	100	100	100	100	50	.....	99
Vermont.....	99	.....	.....	102	95	92	100	96	61	.....	99
Massachusetts.....	96	.....	.....	.....	.....	95	97	100	57	.....	75
Rhode Island.....	101	.....	.....	.....	.....	100	97	100	61	.....	92
Connecticut.....	100	.....	.....	.....	.....	95	97	100	54	.....	87
New York.....	101	.....	.....	94	59	97	100	99	60	.....	100
New Jersey.....	88	.....	.....	.....	.....	99	99	102	75	.....	103
Pennsylvania.....	100	.....	.....	98	98	90	100	98	50	.....	94
Delaware.....	80	75	.....	.....	.....	100	100	100	55	.....	101
Maryland.....	.....	.....	.....	.....	.....	99	98	95	50	.....	55
Virginia.....	95	93	.....	127	100	95	97	95	60	.....	58
North Carolina.....	93	95	.....	.....	.....	96	100	98	54	.....	58
South Carolina.....	97	96	.....	.....	.....	96	95	95	50	.....	76
Georgia.....	103	100	108	.....	.....	97	96	97	40	.....	46
Florida.....	98	.....	.....	.....	.....	102	96	99	71	.....	80
Alabama.....	94	94	111	.....	.....	88	94	100	80	.....	75
Mississippi.....	95	95	96	.....	.....	95	93	99	81	.....	97
Louisiana.....	97	95	.....	.....	.....	95	93	99	80	.....	98
Texas.....	.....	104	96	.....	.....	85	95	99	63	.....	98
Arkansas.....	98	90	.....	.....	.....	91	97	102	71	.....	80
Tennessee.....	93	101	.....	.....	.....	85	95	98	46	.....	72
West Virginia.....	103	99	.....	100	89	97	103	95	80	.....	38
Kentucky.....	101	.....	.....	.....	.....	92	102	95	75	.....	40
Ohio.....	88	.....	.....	102	103	95	100	98	56	.....	74
Michigan.....	100	87	.....	.....	.....	97	98	101	61	.....	61
Indiana.....	98	90	.....	100	100	97	99	100	78	.....	88
Illinois.....	92	90	.....	.....	.....	89	99	100	60	.....	70
Wisconsin.....	87	80	.....	90	88	87	100	96	40	.....	60
Minnesota.....	103	105	.....	.....	.....	89	102	101	65	.....	70
Iowa.....	83	83	.....	98	99	87	100	96	77	.....	83
Nebraska.....	85	87	.....	80	80	97	100	100	58	.....	76
Missouri.....	79	79	.....	.....	.....	97	98	99	58	.....	64
Kansas.....	81	92	.....	.....	.....	100	104	101	57	.....	79
Nebraska.....	76	90	.....	.....	.....	110	105	99	87	.....	95
California.....	93	.....	.....	106	103	97	105	97	77	.....	77
Oregon.....	113	.....	.....	.....	.....	83	102	107	102	.....	92

Table showing the condition of the crops, &c., on the 1st day of August, 1873.

States.	CORN.		SPRING- WHEAT.		SPRING- RYE.		OATS.		BARLEY.		BUCKWHEAT.		POTATOES, (So- lanum tube- rosun.)		POTATOES, (Ba- tatas edulis.) SWEET.		TOBACCO.	
	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average com- pared with last year.	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average con- dition Aug.	ust l.	Average con- dition Aug.
Maine.....	84	88	91	88	87	92	95	91	87	92	95	91	91	87	91	87	87	87
New Hampshire.....	100	95	96	92	93	98	99	99	93	98	99	99	99	87	99	87	87	87
Vermont.....	90	89	95	92	89	98	92	92	89	100	92	87	87	85	87	85	85	85
Massachusetts.....	98	95	95	81	85	93	90	82	82	76	82	82	82	70	82	70	70	70
Rhode Island.....	103	85	95	78	82	98	95	89	89	101	89	95	95	96	95	96	96	96
Connecticut.....	93	85	95	85	82	97	92	89	89	100	97	92	92	93	92	93	93	93
New York.....	86	94	97	75	86	94	97	75	86	100	94	92	60	59	60	59	59	59
New Jersey.....	88	72	87	106	96	106	96	106	96	100	96	96	96	85	96	85	85	85
Pennsylvania.....	67	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Delaware.....	66	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Maryland.....	97	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Virginia.....	90	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
North Carolina.....	84	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
South Carolina.....	100	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Georgia.....	108	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Florida.....	103	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Alabama.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Mississippi.....	90	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Louisiana.....	84	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Texas.....	81	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Arkansas.....	91	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Missouri.....	96	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Tennessee.....	101	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
West Virginia.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Kentucky.....	91	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Ohio.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Michigan.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Indiana.....	87	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Illinois.....	97	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Wisconsin.....	94	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Minnesota.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Iowa.....	90	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Missouri.....	93	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Kansas.....	92	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Nebraska.....	94	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
California.....	100	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85
Oregon.....	100	72	87	98	106	106	96	106	96	100	96	96	96	85	96	85	85	85

Table showing the condition of the crops, &c. — Continued.

States.	HAY.			PASTURE. Average condi- tion Aug. 1.	BEANS. Average condi- tion Aug. 1.	COTTON. Average condi- tion Aug. 1.	SORGHUM. Average condi- tion Aug. 1.	SUGAR-CANE. (not sown in.) Average condi- tion Aug. 1.	APPLES. Average condi- tion Aug. 1.	PEACHES. Average condi- tion Aug. 1.	GRAPES. Average condi- tion Aug. 1.
	Average condi- tion of timo- thy, Aug. 1.	Product of clo- ver compared with last yr.	Average condi- tion of clover when har- vested.								
Maine.....	105	151	109	101	94				67		93
New Hampshire.....	100	107	105	101	100				66		88
Vermont.....	93	80	101	96	96				75	65	84
Massachusetts.....	87	90	91	83	100				46	38	96
Rhode Island.....	76	73	93	70	97				70	86	95
Connecticut.....	93	100	110	88	100				46	36	78
New York.....	74	90	90	85	100				57	45	89
New Jersey.....	84	75	84	70	92				61	29	96
Pennsylvania.....	93	99	95	97	94				67	22	70
Delaware.....	62	87	75	42	80				40	107	87
Maryland.....	73	74	74	66	98				56	46	90
Virginia.....	102	110	105	99	95	108	95		83	22	95
North Carolina.....	100	102	101	100	97	95	94		47	52	81
South Carolina.....	105			104	100	87			42	32	63
Georgia.....	96	143	98	108	102	95	100	102	75	61	79
Florida.....				107		103		100		65	96
Alabama.....	111	105	98	110	107	91	100	108	71	67	85
Mississippi.....	115	81	72	108	102	88	95	102	77	62	100
Louisiana.....				109		86		194	96	64	100
Texas.....				117	133	83	102	97	59	51	73
Arkansas.....	104	108	101		95	93	94		82	60	78
Tennessee.....	100	100	95	108	100	95	98		27	32	69
West Virginia.....	104	108	105	107	100		99		71	50	99
Kentucky.....	98	92	96	101	100		90		56	57	79
Ohio.....	95	100	100	107	99		88		66	29	59
Michigan.....	95	93	100	97	101		92		69	42	96
Indiana.....	99	104	93	109	98		90		60	37	75
Illinois.....	96	89	97	98	94		90		47	20	73
Wisconsin.....	105	78	93	102	97		92		58		79
Minnesota.....	105	101	95	105	89		92		74		87
Iowa.....	107	100	101	100	93		95		66	68	76
Missouri.....	99	105	101	91	86	86	86		62	35	75
Kansas.....	101	106	102	106	96	96	98		74	30	85
Nebraska.....	104			110	89		102		78	72	102
California.....	92	108	97	87	94				95	80	72
Oregon.....	109	111	103	115	105				100	88	102

STATISTICAL MISSION.

The Statistician of this Department was commissioned, in May last, as its representative at the International Exhibition at Vienna, Austria, and was also instructed to investigate the status of agricultural statistics, and the means and appliances used in official statistical collection in the countries of Western Europe. He also received a commission from the State Department to the same exhibition.

An incidental purpose of the mission was to study the possibilities of the inauguration of an international system of crop reports. No official system of reporting the condition of growing crops was found in operation, and no systematic attempts at such reports are essayed, except in a few instances, as in the case of London newspapers, which collect, somewhat systematically, the opinions of their correspondents relative to the grain yield. Suggestions of a practical nature upon this subject are reserved for future elaboration.

The government offices of London, Paris, Berlin, and Vienna, were visited, and every facility was courteously furnished for investigation of their statistical methods and their operations in aid of agriculture. The official representatives of the United States at these seats of government promptly rendered all desired aid in procuring facilities for such investigation. There is great diversity in the organization, scope, and action of the agricultural departments of these governments. Some are connected with other branches of administration, and others are invested with the dignity of full departments. An increasing importance is of late accorded to them, and they are evidently becoming more efficient and useful. They are generally organized upon a foundation of less breadth than that of our own, but pursue investigation with greater tenacity and thoroughness, and are enabled to do so by more liberal appropriations of money, thereby rendering their special reports of greater value. Their annual reports are of less interest, and do not appear to have a very extended circulation. An exposition of the main features in the organization will hereafter be given in the monthly or annual reports.

A period of ninety days allotted to such a mission was found quite too short for the investigation and travel involved, and but four weeks could be spent in Austria at the *Welt Ausstellung*, the *Ackerbau ministerium*, at field trials of machinery, public and private exhibitions of farm animals, and in rural observation of the methods of practical agriculture. A mass of statistical data, a great variety of official and other publications, were collected, and will be utilized in future numbers of these reports. An assignment, by the Scientific and Artisan Commission, of the subject, "Wools of the exhibition," was accepted, and a report will be made to the State Department. A formal report of the agricultural features of the exhibition in detail is not deemed desirable, full publicity having already been achieved in the periodicals of the day, but all that is deemed suggestive and valuable will be presented in connection with technical and statistical data, much of which is yet to be translated and prepared for specific presentation.

The American portion of the exhibition, of which so much has been unjustly said, was not so complete as it should have been, nor was it so meager as has been represented. In mowing and reaping machines it was represented fully, and in the experimental trial few competitors were found, and undoubtedly no successful competition could have been

inaugurated by the manufacturers of the world; in other agricultural implements there were comparatively few entries. The intelligent foreigner appeared to realize that American manufacturers generally do not seek a European market, and that the reaper, the sewing-machine, tramway-car, the shoe-manufacturing machinery, and other articles that stood in apparent isolation, were there because foreign markets were opening rapidly for them. These characteristic American inventions, realizing the labor-saving idea and a marvellous economy and suitability of material, were recognized as a very few forms representing at home a broad series of manufacturing industries. There were not a few European mechanics who were candid enough to say that a large proportion of the new ideas in mechanism brought forth by exhibition were to be found in the American department.

THE OSIER WILLOW.

BY THE COMMISSIONER OF AGRICULTURE.

THE SALIX OR WILLOW: in a series of papers, by William Sealing. Practical instructions for planting and culture; with observations on its value and adaptability for the formation of hedges, &c.^b London, 1871.

This little work is prepared by one who derives his knowledge from the experience of many years in the propagation of the willow, and treats the subject of the various species of willow, their mode of propagation, and the uses to which they may be applied, for the purpose of communicating his knowledge to others and of promoting this interesting industry.

Little attention or study has been bestowed upon the willow-plant in the United States, although there is scarcely any part of the country in which it may not be successfully raised. It grows readily from cuttings, and in almost any quality of soil, although, like all other plants, its quality will be characterized by the soil in which it grows. The various purposes to which the willow may be applied, its extensive usefulness, and the facility with which it may be raised, command the attention of our farmers whether it may not be made a most profitable industry. The species of willow best fitted for cultivation involves the consideration of the purposes for which they are designed and the quality of soil in which they are to be grown. For wicker-work, such as baskets, carriage and sleigh bodies, a particular species is most profitable; whilst for hedges another species is better adapted; and for coopers' hoops or poles another is more fit. So that any one about to enter upon the business of propagating the willow should consult not only the quality of his soil but the market where he was likely to dispose of his product. Doubtless the use of the willow in this country would be greatly multiplied by the facility for obtaining it, and by the improvement of the quality, which would be a necessary consequence of its careful cultivation. It has been estimated that between six and seven thousand acres in England and Ireland are now appropriated to the cultivation of the willow, and yet there is imported into that country, from France, Belgium, and Holland, 4,400 tons, of the estimated value of \$218,045, in addition to baskets of the value of \$224,200, and the extension of the trade is gradually increasing. The following table, obtained from the Bureau of Statistics, is interesting, as showing the progress in the use of the willow in the United States:

Statements of imports into the United States of willow or willow ware during the ten years ending June 30, 1873.

Fiscal years ended June 30.	Willow or willow ware.	Willow or osier prepared for use.	Willow or osier wares, baskets, and all manufactures of like material.
1863.....	\$89,916		
1864.....	139,353		
1865.....		\$88,803	\$28,028
1866.....		225,660	57,907
1867.....		202,408	39,078
1868.....		202,957	36,302
1869.....		178,689	37,512
1870.....		204,409	50,715
1871.....		205,573	39,935
1872.....		265,145	48,884

It is very certain that there has not been an importance attached to raising the willow in this country, which has induced a systematic and careful cultivation of it; and when it is grown it is without that care which is necessary to improve its quality and quantity.

The author of the papers whose work we propose to review and from which to quote largely, treats of the mode of cultivation, the varying species, and the uses to which the willow is applied. He says:

There is a very widely spread, but erroneous opinion, that the willows will only grow in wet, boggy ground; and that, as an article of produce, they are not worth the attention of the cultivator. With ordinary care a willow-crop will pay the grower as well as any crop on the farm, and with this advantage, that land comparatively valueless for root or grain crops can be used for an osier plantation. To grow willows successfully there must be an adaptation of the variety to the soil; if this is not attended to, either the crop will be a failure or the produce will be deficient in the qualities most sought after. The following rule may serve to guide intending planters: All the varieties of the soft-wood class, known in the trade as osiers, will grow in a much damper soil than the hard-wooded, generally called fine-tops. The present market-price of green willows ranges from two to five pounds, and of peeled willows from nine to twenty-five pounds per ton. This wide range in value shows the necessity of exercising care in selecting suitable kinds for planting, and of planting each variety in the soil best adapted to its requirements. The following properties must be sought after for willows intended to be used in the green or brown state: toughness; level surface, full top, wood soft, remain a light brown color when dry, and a good cropper. For willows intended to be used in the peeled state, the under-mentioned qualities are necessary in order to realize the best market-price: toughness, elasticity, level and smooth surface when peeled, peel a good color for either white or buff, split well and make good scains, great length of shoot in proportion to thickness, small quantity of pith, hardy and not liable to diseases, a tendency to grow straight and clear of side-shoots, and a good cropper.

As a rule willows are tougher when grown on strong loam, inclining to clay, than on any other soil; but some of them, as the *Salix helix*, or rose willow, a vigorous plant on lighter soil or warp land, becomes a mere scrubby shrub when planted on clay. The varieties of willow are extremely numerous. Dr. Host, of Vienna, is said to have cultivated over 300 sorts; his grace the Duke of Bedford, at Woburn Abbey, about 250 sorts; and the nursery at Basford contains over 300 varieties.

In reference to the preparation of an "osier plantation," the writer lays much stress upon "accurate planting," as conducing to the subsequent ease with which the plants can be cultivated and kept clear of weeds; and then says:

One of the first things to be observed in forming an osier plantation is to drain it of all stagnant or surplus water, as no basket-willow will arrive at perfection in land

saturated with moisture. It must also be well pulverized or prepared to a depth of 22 or 23 inches, and thoroughly cleared of weeds; and, if poor, well manured before planting. If it is strong, cold land, lime may be used with advantage; but if lime is applied on light land the crop will be scabbed or cankered. If possible, avoid open drains, and throwing the land into beds; where drains are required use pipes, as open drains would interfere very much with the economical working of the land afterwards. If the land is well cleaned and properly prepared, much after-expense will be spared, and better crops will be obtained. The opposite course would be false economy.

Much difference of opinion exists among growers as to the size and age of cuttings; the distance between the plants; how far it is necessary to push them into the soil; and how far to leave them out or above the ground. I have very carefully examined the various methods—have tried and experimented upon them—and find the following plan to be the best, producing the heaviest crops, best quality, more easily and consequently more cheaply cleaned, the least exhaustive of the soil, and if it is desirable to change it to ordinary arable land again, it can be done at a very moderate expense. The cuttings may be taken from either the one or two year old shoots; if the one-year old shoots are well grown they will strike more easily, and throw out quite as strong spray or shoots as two-year olds, and are not quite so expensive; they should be nine, or at most ten, inches long, and cut from the rod with a sharp knife, in a slanting direction. The bottom or root end of the rod is first sharpened, then take the first ten inches with *one* sharp cut, again sharpen the rod and cut off a second, and so on for the third, if the rod is very finely grown. Not more than three cuttings should be taken from one rod, unless it is a two-year old, in which case it may be cut up to the entire length of the first year's growth. In cutting the sets not more than *one* cut should be made, however thick the rod may be, as it is necessary to have the ends without any split or shatter. If the rods from which the cuttings are obtained are in good condition the cuttings will sustain no injury by remaining out of the ground for five or six weeks, if not exposed to very dry winds. All the varieties of *S. fragilis*, or willow proper, will do best planted 15 inches by 12: the varieties of *S. viminalis*, or osier, 13 inches by 12. *S. amygdaliæ*, and its varieties, known in the trade as Spaniards, Germans, Italians, &c., will do best and produce the heaviest crops planted 16 inches by 8; and this distance will do for all the finer kinds of willows.

The writer then describes a mode of planting by means of a frame, which marks the particular spot at which the plant is to be inserted in the ground:

This will be found a much more expeditious as well as more accurate method than planting by lines, and the cost of such frame is not more than a few shillings. If the ground is in good condition two active boys will plant, with this frame, 4,000 cuttings per day. To prevent the ends of the cuttings injuring the hands by pushing them into the ground, hand-leathers must be used; the thumb and forefinger of the right hand must also be covered, to enable them to push the cuttings quite into the ground, as no part of the plant must be left uncovered; this is a very important point to be attended to. The cuttings must be pushed in a little slanting; they will be more easily got into the soil, and put out side roots better than if pushed in perpendicularly.

The advantages to be derived from getting the cuttings quite into the ground are many: Rods so planted send out straight shoots, and when the crop is cut off close to the ground manure can be applied the land plowed between the rows and harrowed over, and kept as clean as an ordinary arable field. This, by many, will be looked upon very skeptically, but I have practiced it for some years, and have every reason to be satisfied with the result.

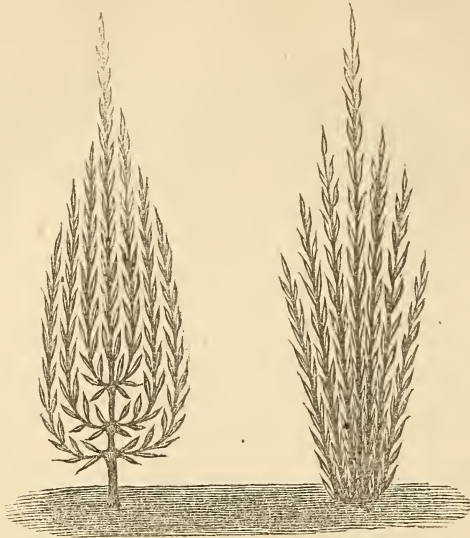
Before this method was adopted I found it next to impossible to keep willow-grounds from being overrun with weeds; strong land, more especially, became sodden and hard, and the weed-roots could not be got out by the hoe. It has often been asked whether the roots of the willows do not get destroyed. In some cases the roots are disturbed slightly, but disturbing a few roots does not injure the plant, and great vigor is imparted to them by manuring and pulverizing the ground. After the land has lain some time in ridges and has shown a tendency to break down, I use a harrow with the teeth rounded at the ends so as not to tear or split the plants. A willow-plantation worked in this way presents a very different appearance to the reedy rubbish beds, with a few moss-grown pollards dotted about, and called osier-grounds, met with in many parts of the country.

The accompanying illustration shows the difference between willows growing direct from the ground and those planted in the old style.

Willows grown straight are more valuable than when bent or crooked at the butt, and they cannot be grown straight if the stools stand above the ground. By cutting close to the ground the stools or roots do not rot or become covered with moss, and by turning over the ground and keeping all clean, the larvæ of insects destructive to the plants are got rid of; and if it is desirable to stub the ground, so as to use it for other

purposes, a strong plow and a good team of horses, taking the rows cross-way on, will easily rid the ground of roots, or so loosen them that they can be got out with a drag, at less than half the cost of stubbing by the spade in the ordinary way.

Nearly all the writers on the subject of willow-planting recommend that the first year's shoots, after planting, remain on the stools, not to be cut until the second year.



Osier willow.

The reason assigned for which plan is, that the roots may get better and firmer hold of the ground before they are disturbed by cutting. In whatever light this is viewed I hold it to be radically wrong; for, should the first year's crop (which is usually the case) be short, full of shoots at the sides, and dwindling, they would be of no value whatever if allowed to stand for two-year olds. The value of a two-year-old willow depends entirely upon the shank, or first year's shoots, being long and straight; the second year's growth merely adding thickness and solidity. Should the first year's shoots be allowed to remain—the roots having obtained so little hold of the ground—the wind will act upon the long shoots as a lever, and loosen the roots much more than careful cutting would do.

In the majority of cases the first crop will be nearly worthless, but if carefully cut off, the second crop will be of considerable value.

He then enforces the necessity of keeping the ground clear of weeds, and proceeds to give the following directions with regard to cutting and preparing the plant:

Whether the crop is intended to be used green, or to be peeled, it ought to be cut off in the months of November and December, and the land stirred up with the plow. If cut off at this time the buds remaining on the stools will swell during the winter, and be much more likely to put forth vigorous shoots than if cut off nearer the spring, and the land will receive the benefit of the winter's frost by being broken up. The rods must not, in any case, be cut until the leaf has fallen, or a flow of sap will follow the knife, and the plant will be weakened in consequence. For cutting close to the ground a heavy, hooked knife, cranked near the handle, must be used; it must be very sharp, and the cutting stroke must be sharp and decisive; each stool or root must be cleared by one stroke, the rods being held tightly in the left hand. If any plant is found defective or dead remove it, and stick into the vacant place a full-grown rod, and let it stand to grow. If a short cutting is put in, the surrounding plants will, in all probability, smother it, and prevent its growing.

Cutting is generally paid for by the bundle, the price in the midland counties being 2s. 6d. per score bundles, 3 feet girth when tightly tied up. The tie or band should be about 8 or 9 inches from the butt or root end of the rods, and the measure be taken

close to the band. These prices vary a little in different districts, and are only mentioned here to give a general idea of the cost of osier-cutting where the crop is of average size. If the crop runs small, the price will be more per score bundles; if over the average size, a little less. When cut and tied, the rods should be cleared off the ground at once, and, if for peeling white, they must be placed standing on their butts in the water to the depth of 6 or 8 inches, firmly fixed in their position (so as not to be disturbed by the wind) until they begin to grow in the spring, and the bark becomes sufficiently loose to be removed, which may readily be ascertained by trying to strip them with the fingers. If the crop is to be peeled buff, by using boiling water to loosen the bark, or if intended to use green or be dried as brown, they can be reared on the butts in any dry place until the sap has left them, and they are dry enough to put under cover; or stack and thatch down if more convenient.

It may be necessary to explain what is meant by peeling buff, in contradistinction to peeling white. It is now greatly the fashion to make baskets of willows peeled by steaming or boiling, instead of peeling by the ordinary course, as it has been found that the baskets of the boiled willow are much firmer, and wear considerably longer than when made of white rods; and in the process of boiling, the coloring matter contained in the bark stains the willow a buff color. The extra durability of baskets made of the boiled willow over those made of willows peeled white, only requires to be more generally known to make white baskets things of the past, where wear and tear is required.

Many will consider the willows too crowded by planting so closely as I have here recommended. It must, however, be borne in mind that no instructions are given here that have not been practically tested by myself, and compared with the results of other systems, both in weight and quality of crops, and in the ease and economy of working.

It has been stated before that two essential qualities in a good basket willow were length of shoots, with the least thickness, also freedom from side branches, qualities which can best be obtained by close planting.

All varieties of willows, however straight their tendency may be, if allowed too much room, will spread, thicken, and throw out side branches; this will easily be seen by examining any well-managed osier ground, where the outside rows will be found crooked, and of less value than the inner rows. Let any one examine a willow-holt, and it will be found that those rods are the best where the growth is the closest. It has been urged by what may be called the old school of planters, that if planted so closely in a few years the stools would touch each other. This would be the case if cut above the ground, and heads three parts rotten and useless, and as large as cab-bages, were allowed to accumulate. But this, to a great extent, is prevented by the method of cutting recommended.

The system of close planting and cutting to the ground has been practiced in Belgium for many years, and so successful have the Belgian planters been that they now export largely, not only to Great Britain, but to America. The sorts they cultivate are inferior to many of ours, but the management of their grounds is better. All grovers of willows will have observed that the first crop or two after planting always grow crooked and full of side-shoots; this is entirely due to wide planting. The first year the cutting or plant does not put out more than two or three side-shoots, and those, as a rule, rather small; they have thus ample room to follow their natural tendency; light and air being procurable all around them, they have not to seek it upwards.

Willow-crops, like corn or root crops, are subject to many diseases, and it will appear strange to those who have been accustomed to consider the willow as a thing requiring no attention to be told that it is subject to as many diseases as a crop of turnips, and requires as much care to be grown successfully. The *Aphis* or smother-fly is a great pest to all the sweet-scented or soft-wooded willows, known to basket-makers under the term of soft sorts or osier, *S. holoserica* suffering more than any other variety; hence the great uncertainty of obtaining a good crop from this willow, for as a productive yield seldom occurs above once in three years, it renders it the most unremunerative sort of basket-willow grown, notwithstanding its good qualities and the great value of a good crop when obtained. Isolated cases of extraordinary crops of this variety have been made public, and the extreme risk being kept out of sight, has caused a sort of "nine days' wonder," at the great profits of willow-growing. Intending planters must not reckon upon realizing extreme profits. With proper care willow-growing will pay quite as well as any crop usually grown in this country, and land of little value for ordinary culture can be made remunerative by this means.

The writer then furnishes an accurate account of the expenses of preparing the ground, price of cuttings, planting, weeding, rent, taxes, and cutting an acre of ground in England for three crops; but, as the prices of land, labor, and taxes differ so materially from those of this country, it would not afford much valuable information to the planters here.

The third year's crop may be taken as an average value of the ten following years, after which, unless great care is bestowed, there will be a slow but gradual diminution of produce. Taking these, however, as the data to reckon from, the actual profit at the end of twelve or thirteen years would be very considerable. There will, of course, be accidental or special circumstances which will, to some extent, alter the nearest calculation that can be made; for, as willows are liable to certain diseases, and also subject like other crops to the fluctuation of market prices, allowances must be made. With respect to diseases, which consist chiefly in the attacks of insects, much is in the hands of the cultivator. The cutting down to the ground, and leaving no lodgment for the larva, combined with cleanly cultivation, will do much towards warding off their attacks. Again, as in other crops, the damage done to willows extends over a large area, and when a more than usually bad season occurs an advance of prices takes place, and it not unfrequently happens that a bad crop is not necessarily a loss to the grower. Some varieties of willow are very little subject to the attacks of insects, and the prudent cultivator will carefully avoid the kinds that are so, and leave the more speculative man to grow the more precarious sorts.

No one must attempt to grow willows (unless of the bitter sorts) where hares or rabbits abound. Certain loss of capital will be the result of planting in such places. The rule has been to plant willows in any out-of-the-way corner, where nothing else would grow, and when planted take no further care of them. Such a system can never be made to pay, except for coppice-wood, and I should strongly advise no one to attempt cultivating basket-willows in such a fashion; but so little attention has been paid to the subject hitherto that there is a comparatively new and wide field open to the man of enterprise and ability.

The average weight of a crop of the best and harder kinds of willows would be in the green state about 6 tons per acre, and of the soft sorts or osier 7 or 7½ tons. At present prices the respective values would be, if sold green:

6 tons, at £3 10s. per ton.....	£21 0 0
7 tons, at £2 10s. per ton.....	17 10 0

If peeled the 6 tons would produce 2 tons of white willows, worth 16s. per cwt., and the cost of peeling would not exceed £7 0s. 0d.

2 tons of white willow, at 16s. per ton.....	£32 0 0
Deduct expenses for peeling.....	7 0 0

Produce of an acre.....	25 0 0
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7 tons of osiers, if peeled, would yield—

2½ tons of white rods, at 11s. per cwt.....	£27 10 0
Deduct cost of peeling.....	5 10 0

Produce of an acre.....	22 00 0
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The quantity here stated as the average produce of an acre is not intended to apply to those weed-beds that are not more than half planted, but to an osier-bed under proper cultivation. It will be seen that the cost of peeling, and also planting osier, is not quite so great as that of the finer kinds, the rods being larger, and fewer cuttings required.

The above estimate is for a crop of one year's growth; for two-year old willows it is absolutely necessary to have osier, as no hard-wooded sorts make good two-year-olds, whilst osiers, as two-year-olds make a better return. By osiers is here meant the soft-wooded sorts, *Salix viminalis*, and its varieties, which are always called osier by basket-makers, in contradistinction to the finer varieties.

In cultivating willows for two-year-olds, if it is intended to allow them to stand upon the stools for the second year, all the small, crooked, or rough rods which are of little value should be pruned or taken away with the knife, and only the long, straight rods allowed to remain, by which means greater vigor is imparted to them; or, if the object be to extend the area of planted ground, they may be all cut down, the finest rods only being selected and stuck into prepared ground in their entirety, and left in that state to be cut off the following season, by which means an excellent crop of two-year-old osiers will be obtained, and the ground planted at the same time.

The chief points to be observed by the cultivator are, to keep his land clean and well worked, and to replace any failing root by sticking long rods in the ground, as before stated, thus keeping his land fully cropped. If any intending planter means to allow weeds and willows to strive for the mastery unmolested, and give no attention to the ground when planted, I should advise him to let willow-growing alone as a source of profit.

Another purpose to which the willow may be applied is well worthy of the attention of farmers in this country, where timber for fencing is

becoming so scarce and expensive. In England growers of osiers have adopted the bitter willow, in preference to thorn or osage-orange, for hedges. It is of very rapid growth, and because of its bitterness cattle will not injure it, and vermin will not destroy it. It forms a most perfect protection, and at the same time produces an annual crop quite as remunerative as that grown upon any other portion of the ground. The labor and expense of cutting down and keeping in shape the osage-orange, locust, or thorn-hedge is made an objection to its more general use, whilst the product of the willow will not only meet this objection, but make an additional profit. The writer gives the following instruction how to make a willow-hedge:

To form a good efficient willow-hedge the ground must be dug to a depth of 15 to 18 inches, and effectually cleared of weeds, and, if poor, manured; in fact, it is necessary it should undergo a similar preparation to what would be required if it were intended to plant a thorn-hedge. Should the ground be very low, and charged with stagnant water, it will be necessary to throw out a ridge to plant upon, for no willow will flourish in a swamp.

If it be desirable to form a hedge at once, willow stakes, 4 or 5 feet long, may be used, the ends of which must be sharpened and pushed 12 inches into the prepared ground, 6 inches apart, in a standing direction thus // // // //, and be temporarily wattled at the top, to hold them in position, until such time as they shall have fastened themselves by the spray which will grow up perpendicularly, thus www. Or, if it be preferred, they may be pushed in straight, and as the shoots put out at the sides they can be wattled together, and thus form a fence equally effective as the above.

Another method is to plant a double row, crossing them in the manner following xxx. These should be secured temporarily by a bast-tie, until by growth they become fastened in position. The above methods are the most expensive on account of the extra length of the cuttings required, and would, of course, only be adopted where it was required to have a hedge in the shortest possible time. The most economical mode is to plant cuttings taken from two or three year old shoots, and not more than 12 inches long; these should be pushed into the ground at the same distance apart, viz, 6 inches, or closer, if the hedge is intended to be game-proof, and at the end of the first year, if the shoots have not grown sufficiently strong, they should be cut to the ground, when the subsequent growth will be found strong enough to train into a permanent fence in any form that might please the fancy of the grower.

As regards the monetary value of a hedge of this description, my own experience leads me to estimate its annual produce, based upon a low calculation, at 5s. per chain. The weight of cuttings obtained from a hedge at Toton, 200 yards in length, and of two years' growth, which was cut February 21, 1871, amounted to 1 ton 15 cwt. 1 qr., and which, at the moderate estimate of 50s. per ton, comes to £4 8s. 1½d. In this case the fence was allowed to grow two years before cutting, as it was desirable to leave it as a screen for more tender plants; whereas, had it been cut each year, which would have been the case under ordinary circumstances, the crop would have been more valuable.

It should not be overlooked that, owing to the rapidity of its growth, a willow-fence forms an excellent shelter for plants and cattle in an almost incredible short space of time; whilst as a protection against game it possesses this advantage over every other description of fence, that, by attention, and getting it sufficiently close—which may readily be accomplished by interweaving the shoots—it can be rendered perfectly game-proof, for whereas rabbits would burrow under netting, the roots of the willow would present an insurmountable barrier to their ravages.

I should recommend a temporary protection of posts and rails, similar to that used for the defence of a thorn-hedge, but which would not be required so substantial, in consequence of the shorter time it would be necessary for it to remain, as, without some such safe-guard, it would, of course, be liable to be trodden down by cattle. A hedge so planted must be kept clear of weeds, and the soil maintained in a friable state, to admit of freedom of growth, until such time as it becomes perfectly formed, when no further attention or protection will be requisite. I should not advise the line of hedge-row to be encumbered with timber-trees, as they must, necessarily, stunt the growth of the hedge.

The description of willow I recommend for the above purpose is the *Salix kerkii*.

The substitution of willow for thorn in the formation of hedges is not, by any means, a novel idea, its peculiar properties, in this respect, having been noticed by eminent authorities for years past. The properties of the bitter willow are thus described by Miller, the well-known author of the Gardner's Dictionary. "The extreme bitterness of the leaves and twigs renders it valuable for many purposes; when used as a band or withe it is never eaten by vermin, nor, when formed into a hedge, is it browsed on

by cattle; even insects prey upon it much less readily than on the other species. In some parts of Yorkshire its twigs are used for making the finer sorts of basket-work." "By some observations I have made," says Mr. Curtis, "I should think it might be advantageously used for such purposes. Planting cuttings one year, by way of experiment, I found that this species gave the longest one year's shoots, exceeding even those of *S. viminalis*." Linnaeus also recommends it for its toughness, and as a most excellent willow for the formation of hedges, and also as one of the best willows for the finer kinds of basket-work. Dr. Anderson advises its use as a fence for dividing any extensive field of rich ground into separate enclosures, and also remarks there is no fence which would be raised at such a small expense so quickly and continue so long.

Loudon, in his *Arboretum and Fruticetum*, page 1490, states that the inner bark of most of the kinds included in this group (*Purpurea*) is extremely bitter, which renders the plants suitable for the banks of rivers and other places, which are infested by rats, as the bitterness prevents these animals from eating it. It is also frequently planted in Norfolk and Suffolk and in some parts of Essex for plaiting into close, low fences, for the exclusion of hares and rabbits, the bark and leaves being so extremely bitter that these animals will touch neither, while the shoots being long, tough, and flexible, may be formed into any shape; and a fence of this kind is reckoned little inferior to that of wire. This species is well adapted for planting in ornamental shrubberies, from the elegant slenderness of its twigs during winter, the redness of its catkins, the anthers of which are of that color before they burst, and the fine purplish and glaucous hue of its young shoots and leaves. The male plant, being the most beautiful when in flower, ought to be most propagated by nurserymen.

This variety of willow will produce shoots from 5 to 8 feet long in one season.

It will thus be seen from the above quotations that I lay no claim to originality, but, having simply carried out the ideas of these eminent writers to a practical issue, in a district swarming with hares and rabbits, I am in a position to bear ample testimony to the value of their remarks. I can, however, scarcely go so far as to say that hares and rabbits will not touch the very young shoots of this description of willow. Occasionally, when hard pressed for food, they may do so, but never to such an extent as to cause any material injury to the plant.

The Department of Agriculture deems this subject so worthy of attention that it will make an effort to procure, by importation, some of the most valuable willows, for gratuitous distribution, when the proper season arrives.

ENTOMOLOGICAL RECORD.

BY TOWNEND GLOVER.

THE COLORADO POTATO-BEETLE IN THE DISTRICT OF COLUMBIA.

—During the last month the much-dreaded western potato-bug, *Doryphora decem-lineata* made its appearance in the immediate neighborhood of Washington, D. C., several of the mature insects having been brought alive to the Department of Agriculture for identification. They were taken by Mr. Charles Chapin, of the Marine Corps, in a garden, feeding on the foliage of some potatoes, and had almost ruined the plants. Paris green mixed with flour, and dusted over the foliage, as yet appears to be the best remedy.

PARIS GREEN.—The Department has also received information that the same mixture of Paris green and flour, or plaster, has been used with good effect to poison the cotton-caterpillar, *Anomis xylinæ*, by sprinkling it over the foliage when wet with dew. Some of our southern correspondents, however, complain that the Paris green now sent out is a very inferior article, and on that account has proved ineffectual in many cases. As this remedy has been highly recommended by some, and pronounced worthless by others, we shall, therefore, be much obliged to our southern correspondents if they will write to the Depart-

ment the results of any experiments they have made with this poison, so as to gather together all the facts, that we may know whether it should be recommended next year, or condemned. Cotton being the great staple of the South, it will be plainly seen that great benefit would arise to the South by knowing the true facts in the case, and the experience of practical planters, before recommending any remedy that might prove worthless and perhaps injurious.

PHYLLOXERA VASTATRIX.—The grape-vine-root gall-louse, so destructive to the grape-vine in Europe, and found in the Western States, has been found on the grape-vine roots growing in the gardens of the Department of Agriculture at Washington. Mr. J. E. Planchon, of Montpellier, France, on his late visit to Washington, made a most thorough investigation of the grape-vines, and after examining sixty of the plants most thoroughly he found only from four to six of these insects alive on the roots. It is also to be observed that this year none of the leaf-gall species, known as the *Pemphigus vitifoliae*, of Fitch, have been found on the foliage of the grape-vines at the Department, but the vines are very much injured by the small insect erroneously known as the grape-leaf thrips, which is a species of frog-hopper, (*Erythroneura*,) belonging to the order *Homoptera*, and which by sucking out the sap causes the foliage to assume a withered and spotted appearance, and, if very numerous, causes the leaves to be shed.

INSECT INJURIES.—Reports of extensive depredations upon the growing crops, by noxious insects, have been received from a large number of counties. The Entomologist would here earnestly reiterate the recommendation of the July report, and request our regular and casual correspondents to send to the Department specimens of injurious insects that may be operating in their respective localities. It is impossible, from the local names and imperfect description by which these are frequently designated in our correspondence, to identify the offending species. A single specimen would often enable the Entomologist at once to recognize the character and habits of the depredator, and to suggest effective means for its extirpation.

Grasshoppers, (*Caloptenus* sp.)—These insects have been very destructive, especially in the States and Territories west of the Mississippi River. It is evident that two species *C. spretus* and *C. femur-rubrum*, are represented in the accounts received at the Department, but from lack of specimens it is impossible to designate, in most cases, the species infecting a particular locality. New Hampshire is the only New England State reporting the presence of grasshoppers. In Carroll County the *C. femur-rubrum* continued to devour the crops until driven away by cool nights; in Sullivan these pests destroyed some fields of tobacco; in Grafton they infested some localities. They were also quite destructive in Chautauqua and Jefferson Counties, New York.

Both species have been active in the West and Southwest. Grasshoppers made their appearance in Bossier Parish, Louisiana. They were very injurious in Palo Pinto, Parker, and Atascosa Counties, Texas, to the grain-crops, and, in some cases, to the fruit. In Montgomery, Hancock, and Bradley Counties, Tennessee, they devoured the corn and grass crops. They appeared in immense swarms in Jefferson County, West Virginia. They appeared in Mahoning County, Ohio, and were more numerous than ever in Lorain; in Medina they were very destructive in pastures. They were no less numerous in Dubois and Newton Counties, Indiana, and threatened the grain and grass crops in Crawford, Lawrence, and Edwards Counties, Illinois. They

were especially mischievous to gardens, oats, and corn in Clarke County, Wisconsin, where they moved southward along a zone five miles wide. Their unwelcome presence was also felt in Murray and Faribault Counties, Minnesota, and they were numerous and voracious in Crawford, Pottawattomie, and Woodbury Counties, Iowa. Severe damages are reported in several counties of Missouri, Platte, Lawrence, Montgomery, Clay, and Saint Genevieve; in the latter the visitation was more disastrous than for twelve years past. They were blown away by the southwest winds in Marshall County, Kansas; they did some damage in Ottawa, immense numbers flying over the county; they were more or less destructive in Washington, Smith, and Doniphan. Their ravages were serious in Burt, Boone, Antelope, and Washington Counties, Nebraska. In Clay County, Dakota, they made such havoc with the promising field and garden crops that many farmers in that region are entirely discouraged and desire to sell out and move to some other locality. They were also very bad in Union, Lincoln, and Hanson. Montana reports destructive visitations of grasshoppers in Lewis and Clarke County, and also in Deer Lodge.

Colorado potato-beetle, (Doryphora decem-lineata).—In New York the Colorado beetles made their first appearance in Ontario County, and effected more or less injury in Chautauqua, Erie, Seneca, and Wyoming. They are reported in large numbers in several counties of Pennsylvania, viz, Beaver, Westmoreland, Armstrong, Indiana, Elk, Huntington, Lawrence, Clinton, Erie, Cambria, Juniata, and Warren; in the last-named county they made their first appearance; in Westmoreland, after destroying the potato-tops, they attacked the tomatoes, and finally satiated their voracious appetites upon the *Datura stramonium*. They are reported in Austin County, Texas, and in Jefferson, Grant, Barbour, Tyler, Brooke, Nicholas, and Mineral Counties, West Virginia. In Nicholas it was observed that they left untouched the Early Rose and Peachblow varieties. In Kentucky they infested Jefferson, Scott, Shelby, Spencer, and Lincoln Counties. Sixteen counties in Ohio were subjected to their ravages in a greater or less degree, viz, Noble, Coshocton, Medina, Auglaize, Butler, Columbiana, Franklin, Granger, Licking, Lorain, Marion, Mahoning, Washington, Crawford, Lucas, and Van Wert. They were troublesome in several counties of Michigan, Lapeer, Calhoun, Jackson, Van Buren, Manistee, and Shiawassee. Indiana reports them in Scott, Decatur, Warren, Cass, Harrison, and Dearborn; Illinois, in Morgan, Sangamon, Pope, Putnam, Carroll, Rock Island, and Lee; Wisconsin, in Chippewa, Pierce, Greene, and Milwaukee; Minnesota, in Sherburne and Stearns; Iowa, in Clinton and Pottawattomie; Missouri, in Boone; Kansas, in Ottawa; Nebraska, in Boone and Thayer Counties.

The common black potato-bug (*Epicauta [atrata] pennsylvanica*) of Leconte is reported in Indiana and Elk Counties, Pennsylvania; Clarke County, Virginia; Crawford, Medina, Geauga, Lorain, and Lucas Counties, Ohio; Decatur and Dearborn Counties, Indiana. In the last-named county a new insect injurious to the potato appeared, which, from imperfect description, is supposed to be the *Epicauta (vittata) cinerea*. In many of the counties above-enumerated very successful efforts were made to exterminate these insects by the use of Paris green and other poisons. In other counties these efforts were but partial, and urged with little resolution; such counties present a discouraging report. In Clinton County, Illinois, the lady-bug (*coccinella*) was reported as damaging the potatoes. It is very probable that this insect was merely hunting the eggs of the Colorado beetle, upon which it feeds voraciously. Farmers often, in this way, mistake their friends for their enemies.

Cut-worms, (*Agrotis* sp.)—A species of this genus injured the corn in Erie County, New York; another injured tobacco in Louisa County, Virginia; another was heard from in Lapeer County, Michigan.

Cabbage-worms (*Pieris* sp.) were destructive in Aroostook County, Maine, and Northumberland County, Pennsylvania. A worm like the common cabbage-worm covered the heads of the sorghum, when in full bloom, in Montgomery County, Tennessee.

Chinch-bugs (*Micropus* [*Rhyparochromus*] *leucopterus*) did more or less damage in Pittsylvania, Halifax, and Mecklenburgh Counties, Virginia; in Burnet County, Texas; in Russell County, Kentucky; in Adams County, Ohio; in Jennings County, Indiana; in Clinton, Pope, White, and Boone Counties, Illinois; in Greene and Dane Counties, Wisconsin; in Miller, Benton, Crawford, Lawrence, and Laclede Counties, Missouri; in Neosho, Bourbon, Montgomery, and Labette Counties, Kansas, and in Gage County, Nebraska. In Labette County, Kansas, they devoured the rag-weed.

Grub-worms (*Lachnosterna* sp.) were active in Atascosa County, Texas, and in Platte County, Missouri. In Monroe County, West Virginia, they honeycombed the meadows and pastures; in Mercer they badly injured the corn. It was probably the same insect that destroyed the growing wheat in Putnam.

Hessian-fly, (*Cecidomyia destructor*.) This insect has been heard from in Russell County, Kentucky, and in Jennings County, Indiana,

Wheat-midge, (*Diplosis tritici*.) This insect troubled small grain farmers in Mercer and Putnam Counties, West Virginia.

Boll-worms (*Heliothis armigera*) injured cotton-crops in Edgefield, North Carolina; in Upson, Marion, Twiggs, Stewart, Coweta, and Calhoun Counties, Georgia; in Jefferson County, Florida; in Saint Clair, Macon, and Perry Counties, Alabama; in Lowndes, Noxubee, and Rankin Counties, Mississippi; in Rusk County, Texas; in Columbia County, Arkansas.

Cotton-caterpillar, or *army-worm*, (*Anomis xylinæ*.)—The visitation of this pest has been one of great severity in the more southern cotton States. It appeared without doing much damage in five counties of South Carolina, Richland, Williamsburg, Laurens, Marlborough, and Orangeburgh. It was reported as not very injurious in Brooks, Lee, Muscogee, Macon, Worth, Glynn, Baldwin, and Twiggs Counties, Georgia; but its ravages were quite serious in Decatur, Schley, Marion, Early, Coweta, Calhoun, Jefferson, and Stewart. In Early County it is stated that those worms which had not webbed up were eating the young bolls. In Macon the caterpillar required a longer period for procreation and showed far less of destructive energy than formerly. A few persons in this county denounced the effects of poisons as worse than the injuries of the worms, but no specific facts were presented.

In Florida injuries were comparatively light in Jackson, Gadsden, Columbia, Alachua, Hamilton, and Suwannee Counties, but more severe in Jefferson, Liberty, Wakulla, Madison, and Leon. Experience varies in regard to Paris green and other poisons. In Liberty the worms appear to ignore and despise all efforts for their extirpation. In Madison few had faith enough to try any remedies. In Jefferson some were successful for the time, but complained that the worms returned after ten or twelve days. In Leon judicious efforts of this kind were quite successful.

In several counties of Alabama the caterpillar was quite active even

in July, the injuries being more severe on fresh bottom-lands. In Montgomery the pest appeared fifteen days earlier than last year. Severe injuries were experienced in Russell, Marengo, Macon, Dallas, Conecuh, Choctaw, Hale, Barbour, Henry, Clarke, Pike, Butler, Perry, and Autauga; the infliction was lighter in Crenshaw, Chambers, Wilcox, Coffee, Jefferson, and Green. In Franklin the caterpillar has never been known. In many localities Paris green and other poisons were used with variant success, but many had too little faith in their efficacy and too much apprehension of accidents to use them properly. In such cases the insects were only checked and not destroyed. In Perry and Dallas Counties poisons were used with satisfactory results when judiciously applied at an early period after the appearance of the worms.

In Mississippi caterpillars were noticed about the last week of July, though in Warren County they put in an appearance on the 6th. They lightly affected Newton, Rankin, and Wilkinson Counties, but were more numerous and destructive in Warren, Marion, Lowndes, Kemper, Clark, Washington, and Noxubee. Paris green and arsenic were in great demand in Marion, but their efficacy had not been decisively tested.

Caterpillars were reported in several parishes of Louisiana: Avoyelles, Cameron, East and West Feliciana, Tensas, Rapides, Madison, Franklin, Concordia, Carroll, Caddo, Bossier, Richland, Iberia, Union, and Tangipahoa. The most serious injuries were felt in Avoyelles, Caddo, Rapides, and Tangipahoa. In Avoyelles Paris green was extensively used, and its efficacy was awaited with special interest.

These worms were comparatively innoxious in several counties of Texas: Collin, Wood, Washington, Walker, Victoria, Uvalde, Matagorda, Fayette, De Witt, Burnet, Rush, and Blanco. They were more severe in Leon, Lavaca, Austin, Grimes, Liberty, Smith, Fort Bend, and Montgomery. In the last-named county half the crop was saved by the energetic use of poisons. Several specific preparations of Paris green were reported as successful in different counties. In Liberty County the worms were quite destructive upon red land, but seemed to avoid the crops on gray land.

In Union, Hempstead, Dorsey, Columbia, Drew, and Clark Counties, Arkansas, these worms were not very formidable, but they made their mischievous power felt in Polk and Ashley. A new cotton insect appeared in Jackson County, Georgia, boring into the forms and causing them to drop. *Per contra*, in Jackson County, Florida, an enemy to the caterpillar was observed in some unknown insect, which largely destroyed it.

Cotton-lice (Aphides) were more numerous than ever in Chowan County, North Carolina, and were quite troublesome in Camden, Pasquotank, and Perquimans.

Grass army-worms (Leucania unipuncta) swept the grass-crops of Edwards County, Illinois.

Horn-worms (Macrosila Carolina) injured tobacco-crops in Halifax County, Virginia.

Apple-worms (Carpocapsa pomonella) injured fruit very seriously in Lunenburg County, Virginia; in Cass County, Missouri; in Benton County, Iowa; in Jackson County, Kansas; and in Salt Lake County, Utah.

Fruit caterpillars (Clisiocampa sp.) injured fruit and forest trees in Haywood and Fayette Counties, Tennessee.

Curculio (Conotrachelus nenuphar) injured apples and peaches in Monroe County, West Virginia.

Borers (*Saperda candida*) were destructive to apple-trees in Grant County, West Virginia.

Rose-bugs (*Macrodactylus subspinosus*) were destructive to grapes in Strafford County, New Hampshire, and Woodson County, Kansas.

Currant-worms, of some undescribed species, injured the currants in Aroostook County, Maine.

MICROSCOPIC INVESTIGATION.

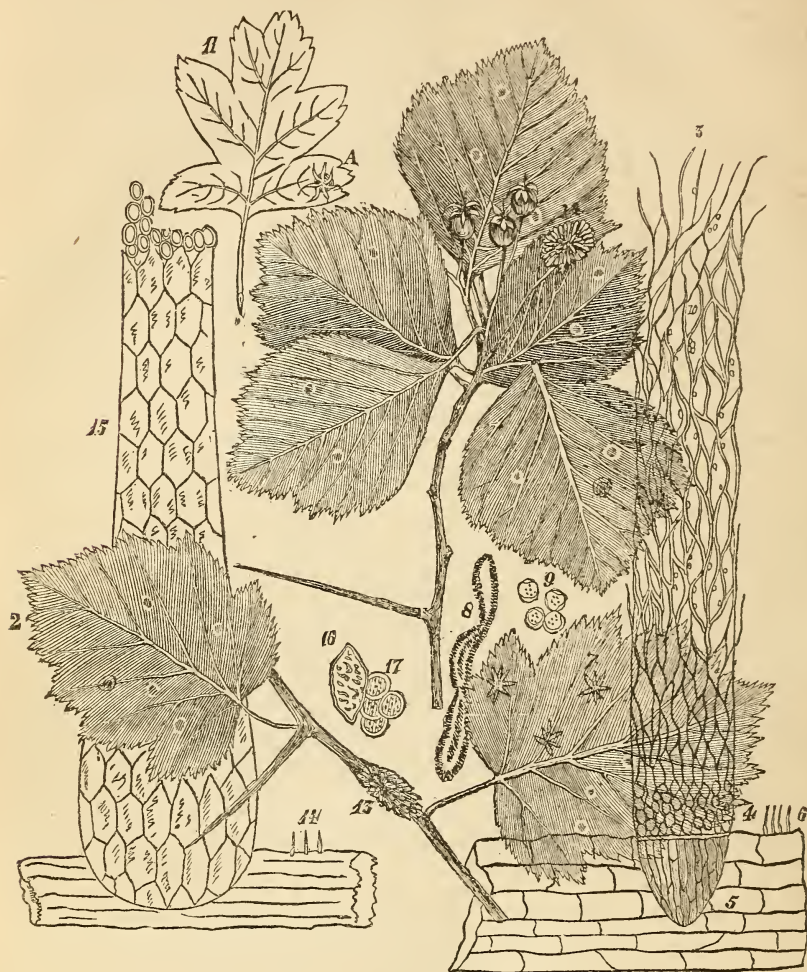
BY THOMAS TAYLOR.

RÆSTELIA LACERATA, TULASNE; *ÆCIDIUM LACERATUM*, GREV.—Greville, in his Scottish Flora, p. 209, vol. iv, describes this fungus as it was known in 1826. He says that it is found on the nerves and petioles of the leaves, on the fruit, and even on the young branches of the hawthorn (*Cratægus oxyacantha*) in summer and autumn everywhere; and M. A. Cooke observes that it is found on the under surface of the leaves and on the petioles and fruit of the hawthorn, and is common from May to June in the United States.

My attention was called last year to the prevalence of this fungus on the hawthorn plants on the grounds of the Department during the months of July and August. This year it has also appeared. I first observed its presence in the month of July, although it may have appeared in June preceding. At this time, September 20, the fungoid forms are decaying. Nearly every variety of the hawthorn is affected, especially *C. punctata* and *C. tomentosa*.

The Washington evergreen hawthorn plant *C. pyracantha*, Pers., seems not to be attacked by any species of fungus of the order *Æcidiiacei*. Judging from my observation I deem it an error to suppose that *Ræstelia lacerata* attacks either the branches or fruit of any variety of the hawthorn. We have many varieties of the hawthorn growing on the grounds of the Department, but in no case have I found *Ræstelia lacerata* on their fruit or branches. This species is confined to the leaves in every instance, and the petioles thus far are exempt from its attacks. On making my first observations and dissections of the orange-colored fungus, seen so frequently on the branches and fruit of hawthorn-bushes, I was much disappointed on finding that the color, structure, &c., of the peridium and spores did not agree with that given by mycologists; but on making search to ascertain if any other similar genus or species of the order *Æcidiiacei* existed on the hawthorn *C. oxyacantha*, or on any of the numerous varieties of this hedge-plant, with the view of accounting for the discrepancy, I found, on turning up the leaves having orange spots on their upper surface, true peridia (sacks) of *Ræstelia lacerata*, Tul.: *Æcidium oxyacantha*, Pers. Under a power of about 90 diameters the general character of the peridia is seen. They are densely aggregated, elongated, submersed, pale-brown, irregularly torn. The sporidia are copious; thus far agreeing with Greville's description. The circular spots on the leaves, Nos. 1 and 2, indicate the general points of growth of this fungus. I find it frequently on the leaf-ribs and terminal points of the leaves, and very often dispersed over the smooth parts of the leaf; sometimes, although rarely, the peridia are on the upper surface of the leaves. 3 represents the peculiar formation of their structure, which resembles net-work. At the juncture of the leaf (see

4) the cells of the peridia are nearly round; at 5 oblong. From 3 to 4 the cellular structure is of a light vandyke brown; at 5 a pale yellow. I am aware that the structure of the peridia, as described by me, varies



in some respects from that by Greville and others, which shows the importance of photographing so minute objects. I have presented sections of these for future use. 6 represents the appearance of the peridia as seen by the naked eye; 7 their general arrangement and their groupings on the leaves; 8 three cells, showing the parts of which the peridia are composed when magnified about 125 diameters; 9 the spores contained in the bottom of the peridia, magnified 125 diameters; 10 represents the openings or meshes; 11 a leaf of a variety of *C. oxyacantha*. On one of its lobes, at A, is represented a cluster of peridia of a species of *Æcidium*, heretofore undescribed as a parasite on the hawthorn, or it may have been confounded with that on the leaves; 14 represents

peridia as they appear to the naked eye; 15, a very highly magnified view of one of them, the cells of which are magnified 125 diameters; 16 one of the cells somewhat more highly magnified. They are not always regular in construction, although generally of the form given. They separate easily from one another by slight friction. 17 represents spores* of an orange color, with which the peridia abound, and which consist of at least three parts: first, a transparent outward cell, which contains an orange-coloring matter, within which may be seen germinal matter in the form of dark spots. The spores are magnified 125 diameters.

All standard works on mycology represent *Ræstelia lacerata* as the only fungus of the order *Æcidiales* that attacks hawthorn plants; but judging from my investigations, it holds a secondary place. So conspicuous are the species of the two genera on them, the one on the leaves, the other on the branches and fruit, that the naked eye can distinguish the difference. That on the leaves appears of a brown color. Owing to the transparency of the cells of the peridia, the brown coloring-matter of the protospores being seen through them, while that on the fruit and branches appears of a rich orange, owing to the color of their protospores. Although of the same order they differ in genus and species.

It is of much importance to ascertain as far as possible the conditions of growth favorable or unfavorable to this order. Its presence on plants is highly destructive to them, and has proved one of the most serious obstacles to the cultivation of the hawthorn as a hedge-plant in the United States. Forty-seven species of *Æcidium* and three of *Ræstelia* are reported by M. C. Cooke. In relation to the ravages of this order of fungi P. H. Foster, proprietor of Babylon nurseries, Babylon, Long Island, writes to the Commissioner of Agriculture, on the 1st of August last as follows:

I send you a specimen of a disease which occurs on some American white-ash trees, which I imported from Flushing, New York. I have noticed the disease on them during the last two seasons. It first makes its appearance early in the season on the leaves, and finally attacks the young wood, as may be seen on the specimens enclosed. It is evidently of fungoid origin. I have many thousands of plants of American white-ash, from two to three years old, planted in my nurseries, none of which are affected with this disease. I have also some European ash, which appear to be very susceptible to it. I wish to obtain a remedy. The loss of so valuable a timber-tree would be too great for our country to bear.

The Department will at an early day commence a series of experiments, having relation to the best mode of treatment of plants affected with this fungoid form of disease. The results of the experiments will be published in the monthly reports.

THE LINEN INDUSTRY IN SILESIA.

The culture of flax and the manufacture of linen in Silesia are of the greatest value among the industries of that important section of the German Empire. The linens of Silesia have long been celebrated for their fine and desirable qualities. In bleaching, what is called the "gentle process," in contradistinction to the usual chemical process, is inva-

* Protospores they should be called, because, in fact, they germinate, and on the threads thus produced the true spores or fruit are borne.

riably used. By this process the cloth is generally three or four months in bleaching, and the lyes are very mild and moderately used. To this fact the reputation which Silesian linen enjoys in this country is perhaps largely indebted. The country people are the manufacturers of the linen as well as the cultivators of the flax, the former being still carried on, as it was centuries ago, in the primitive method, with little aid from machinery. The flax is grown by small farmers, spun on the common hand-wheel by their wives and daughters during the winter, and woven in the houses of the peasants, chiefly by farm laborers when not engaged in field work. It affords but a scanty subsistence, but is, nevertheless, the chief occupation of the country people. It is found, however, that the intermixture of agricultural and industrial pursuits is not conducive to good farming, and it is only in the purely agricultural districts that the better and more profitable system of culture prevails. The peasantry, such of them as are owners of small farms—and many of the farms are from eight to twelve acres only—are in one respect richer than the large land-holders. They are generally not in debt, while the great estates are most of them mortgaged to about 50 per cent. of their value.

The vast consumption of linen by both belligerents of the late war in this country, and also of the late French-Prussian war, stimulated an active demand and very remunerative trade in the flax-producing and linen-manufacturing countries of Europe. A reaction succeeded those wars, and the acreage under the plant has been so much reduced that the production is scarcely equal to the requirements of the trade. Russia is the great flax-producing district of Europe, while Silesia is a leading linen-manufacturing country, especially for the finer fabrics. The production of flax in Silesia is wholly inadequate to the demands of the linen-manufacturers of the province, who are largely dependent upon Russia for their supplies of the raw material. Although the cultivation of flax has been much increased in Russia of late years there is but a slight available surplus for exportation; for there, as in Silesia, the flax manufactures constitute a very important textile industry. The cultivation of flax is increasing in France and Belgium, but not in the ratio of the demand for home consumption. The production in the United States in 1870, according to the ninth census, was 27,133,000 pounds of flax and 1,730,000 bushels of flax-seed. But here flax is cultivated almost exclusively for the seed. The following translation from the Paris Annals of Commerce contains some interesting statements respecting the culture of flax and manufacture of linen in Silesia:

Of all the industries of Silesia, that of flax, the oldest in date, is at the present day the most important. From time immemorial Silesia has produced famous linens, and not long since she exercised in Germany a kind of monopoly for the fabrication of this tissue. In the province of the Rhine important towns, as Brilefeld, manufacture linen almost exclusively, and their products bear a striking resemblance to those of Silesia. The annual sum total which this employment produces is far from being unimportant, since the last statistics, published in 1871, for the three districts of Reichenbach, Schweidnitz, and Waldembourg alone, that constitute the division called "L'Eulengebirge," manufactured about 500,000 pieces of linen. Seven millions fifty-six thousand pounds of flax were employed, five million six hundred thousand pounds of tow, and fifty thousand shocks of linen yarn, a shock being about sixty pounds, were produced.

Although "L'Eulengebirge" is the principal seat of the industry of Silesia, it is not the only one; the product is also manufactured in the mountainous districts of the Austrian frontiers, which are called the "Riesengebirge," and which extend as far as "L'Eulengebirge." There, in most of the villages, the major part of the population, men and women, and even children, devote themselves exclusively to this industry. In "L'Eulengebirge," in 1871, there were 15,326 weavers and 13,164 hand-looms, 3,047 of which were used in the linen manufacture, 8,705 in the cotton manufacture, 589 in

woolen manufacture, and 773 in the manufacture of various other materials. The mechanical looms numbered 1,388. Yarn was bleached to the amount of 336,000 pounds. The principal establishments of Silesia are—

1st. The Royal Factory (Koenigliche Seehandlung) of Erdmansdorf, which devotes 8,450 spindles to flax, and 5,190 spindles to tow, and employs 800 workmen, producing 16,000 shocks of linen yarn, and 11,000 shocks of tow thread. The flax used in this establishment is principally obtained from Russia, Moravia, Saxony, Silesia, and Westphalia. Besides the 800 workmen employed in the factory, work is given to about 2,000 outside laborers. In 1871 this factory produced 4,500 pieces of linen.

2d. The Royal Factory of Landshut, with 7,400 spindles, employs 460 workmen, consumes 672,000 pounds of flax, 1,232,000 pounds of tow, and produces 14,000 shocks of yarn.

3d. The factory of the brothers Albert, at Waldembourg, employs 4,000 spindles, 490 workmen, consumes 1,456,000 pounds of flax and tow, and produces 9,000 shocks of yarn.

There are also five other factories of minor importance: that of Petzhold and Hofmann, at Waldembourg, employing 300 workmen and 4,000 spindles; that of Websky, at Tannhausen, 250 workmen; those of Held, at Friedland, Falki, at Lieban, and Vialard & Co., also at Lieban. The two latter use steam-machines, and run 20,000 spindles.

In "L'Eulengebirge," therefore, there are eight large linen manufactories, employing 50,000 spindles.

We should mention the village of Greiffenberg, which manufactures yearly about 120,000 dozen of handkerchiefs, which are sold not only in the States of the Zollverein but also in Norway and Switzerland. Formerly it carried on an important trade with Russia, which has completely ceased.

Besides the workmen employed in the factories, the linen industry gives employment to a great number who work in their own dwellings; some of these are employed for the year, others only during the dull season. In the district of Reichenbach there are villages, like Langenbielau, Peterswaden, Ernsdorf, and Haberdorf, where the whole population work in flax, either at home or in the factories. The work pays by the job. In the factories the workmen ordinarily get \$2½ to \$4 per week. The workmen at the Jacquard loom earn more. With this modest salary, these mountaineer families, that are generally numerous, can with difficulty earn a subsistence, even when their labor is uninterrupted; for this reason all the women, old men, and children above the age of six years are employed in spooling. The most skillful spooler can earn but twelve cents per day.

Warping affords an occasional resource. It is generally performed by girls. They can earn from \$1½ to \$2 per week.

The average weekly salary of a family, all the members of which labor from morning to evening, is little more than \$5, or \$260 a year.

It is surprising that large families can live on so small an income, and that whole populations manifest a singular attachment to so unremunerative an industry. From time immemorial the trade has been transmitted from father to son, and it is rare that the children ever seek to learn another trade, although the life of these unfortunate beings is only one of deprivation. If we deduct the modest rent of \$14 or \$20 for a chamber or attic, from the annual income of \$260, there remains to each family only \$220 or \$230 to expend for food, clothing, fuel, and incidental expenses. The only aid the government allows these working people consists in gratuitous primary instruction.

The Silesian manufacturing companies employ one-fourth of the whole number of power-looms used in Germany.

The greater portion of the products manufactured in Silesia, the yarn as well as the linen, is consumed in Germany. Large quantities are, however, exported to Austria, Russia, Sweden, Denmark, and even to the United States.

The year 1871 was not generally favorable to the linen industry in Silesia. It felt the reaction of a war that had just terminated, and the want of hands, and especially the need of fuel (it being difficult to transport coal by railroad) forced many establishments to stand still. Raw materials also rose in price. Flax increased to \$2½ per hundred-weight. Fortunately most manufactories had a supply of yarn, which, as workmen could not be procured, had not been woven, and by reason of this circumstance they were able to resume work and to support the high price of the raw material without proportionally increasing the price of their manufactures.

The culture of flax is pursued on a great scale in Silesia. About 50,000 acres are devoted to this cultivation, producing, on the average, 339 pounds to the acre, making a total of 16,950,000 pounds. This culture is carried on principally in Upper Silesia, and on the right bank of the Oder. Of the 16,950,000 pounds of raw flax produced in Silesia, about 1,000,000 pounds alone enter into general commerce; about 500,000 pounds are sold at the principal markets; the remainder is either delivered directly to manu-

facturers, or is retailed upon the premises. Generally, producers prefer to sell on the spot, and this custom makes a ready sale for the best qualities, for in 1871 flax sold on the premises was worth from \$26 to \$27, while that sold at the different markets only reached a price of from \$20 to \$22 a hundred-weight. The principal flax markets of Silesia are those of Breslau and Konstadt.

TEA CULTIVATION AND MANIPULATION.

The Department of Agriculture has always been interested in the development of this cultivation, and has not abandoned the hope that the tea-plant may ultimately be included with the domestic and economical products of this country. The high price of labor, and the mystery in which the matter was shrouded, until the British government undertook the cultivation in their Indian possessions, made almost any attempt at manipulation on the part of private parties a forlorn hope.

The adaptation of various sections of this country to the growth of the plant has been abundantly demonstrated, and plants from seed grown in the Southern States have, from time to time, been raised by the Department for distribution. So far back as 1848 the late Dr. Junius Smith abundantly proved that the mountains of South Carolina would produce and mature tea, although it was there subjected to severe freezing, and heavy falls of snow. Even in the grounds of the Department at Washington the plant has passed through the late severe winter without having been absolutely killed. It will be the object of this article to give such details and particulars relating to climate, soil, culture, and manipulation, as will tend to induce those who have already received plants, and have them growing, to experiment still further, and, it may be hoped, also encourage others to plant.

In the present state of the labor market we cannot expect to proceed on the plan of the British in the East Indies and establish large plantations. It would not pay to do so; but the intelligence of the farmers of this country, and the improved agricultural machinery in use, will render completely easy here what proved an insuperable difficulty in India, viz, the growing of tea for family use. The apathy of the Hindoo races, their dislike of anything new, and the fact that tea is not their popular beverage, militated against the production of tea for their own wants in anything like a general system. Isolated points occur where they acquire a taste for tea, and then they grow and manufacture it very well, but they cannot accustom themselves to cultivate it with any care.

The following suggestions are from a communication received from Mr. James McPherson, as the result of his own observations in India:

CLIMATE SUITED TO THE TEA-PLANT.—There are two very well marked varieties of the tea-plant, if indeed they are not sufficiently distinct to be ranked as species. These are, *Thea Assamica*, and *Thea Chinensis*, (syn. *viride*.) The first of these is the one with which western people became last acquainted, and it occupies a somewhat different position, naturally, to that in which the Chinese plant is usually found, if indeed the Chinese plant has even been seen in other than a state of cultivation. The varied conditions in which the two kinds, with their innumerable varieties, are found, may sufficiently account for the difference in their appearance. *Thea Assamica*, the India species, is usually found growing wild (and able to reproduce itself from seed) along the margins of the Assam forests, frequently manifesting a partiality for the banks of streams. The climate of Assam is tropical, and, in parts, very moist, and frost is almost unknown in its tea-gardens, while the average temperature is about 70°, and the rain-fall about 80 inches. The tea, like the wheat-plant or the vine, has, however, a remarkable adaptation to a very great range of climate, and I have known tea grown with perfect success where the mean annual temperature was only 58° Fahr. and the rain-fall from

30 to 50 inches. Perhaps it will reach its greatest perfection where the mean annual temperature ranges from 60° to 65° Fahr. and where the rain-fall, or what is quite as important, the humidity of the atmosphere, is considerable during the growing season, which, in northern latitudes, usually begins in March. Considerable heat, and foggy, cloudy weather, constitute what is known as a "fine growing time" for the tea-plant. Moisture in the air, rather than moisture in the ground, seems to be requisite. Situations which are exposed to severe frost should be avoided, since it will entail too much labor to protect the *young* plants.

Tea cultivation has been introduced, with more or less success, into British India, Ceylon, Cape Colony, Natal, the Australian Colonies, Saint Helena, Java, Réunion, Rio Janeiro, and the West Indies, and although these climates will grow the plant, yet the manipulation of the leaf has hitherto been so little understood that only two of these countries can claim tea as among their leading productions. India and Java export quantities, but the bulk is the produce of vast estates, under managers who very frequently know comparatively little of the industry, and yet make marketable tea.

SOILS.—Almost any good, free soil, upon which water does not stagnate, will grow the plant. A good garden soil will produce tea in perfection, but it will be best to describe a tea soil as a sandy, chocolate-colored loam, containing an abundance of humus or decaying vegetable matter in a fit state for absorption by the roots.

PROPAGATION BY SEEDS AND CUTTINGS.—The first thing for the experimental grower is to understand the best manner of raising his plants. This is simple, the only precaution necessary being to use fresh seed. If tea seed is kept for any length of time out of the ground it turns rancid, as the chestnut and many other oily seeds are apt to do. Ripe seed is known by its dark chestnut color. As soon as procured it should be laid upon a hard surface and covered with 2 or 3 inches of rotten leaves, decayed hops, or almost any convenient vegetable material. In this position the seed will germinate, and when the sprouts are 2 or 3 inches high the young seedlings may be transferred to beds much in the same manner as market-gardeners prick out celery plants. The plants may be set in nursery-beds at 3 or 4 inches apart, according to the time they may possibly remain. If they are "pricked out" into beds in the spring, to be finally planted out in the fall, or in the fall to be planted in the spring, 3 inches will be ample: much will depend upon the time when the seed is received; if, however, the plants are likely to remain in the nursery-beds for more than six months, it will be best to allow 4 inches between plant and plant. An easier method is simply to plant the seed in the beds in drills from 1 to 2 inches deep and 4 inches apart, in a half shady position; but vacancies from bad seed cannot well be avoided by this plan. By germinating the seed a full nursery is obtained with very little extra labor. The seed may also be planted in hills, as gardeners plant melons, the hills being 5 feet apart. But here they must be weeded all the time, and as an acre of ground would have to be gone over for some 1,742 plants, much extra labor will be entailed by this method of planting the seed where it is to remain. Better to treat it as cabbage, nurse in beds, and afterward plant out. It may be useful to suggest here that it would be well for the nurserymen to turn their attention to the raising of tea-plants for sale in the localities where they are known to thrive.

The only attention a bed of young tea-plants requires is the routine work of weeding, occasional watering in dry weather, and possibly light shading with branches of trees in leaf, cut into lengths of about a foot, and stuck among the plants until they become established. If the pricking out or planting out is done in cloudy, showery weather, this labor may be saved. The propagation of tea by cuttings is a tedious and often very unsatisfactory process. The writer has put down many hundreds of thousands of cuttings, with the view of perpetuating superior varieties. The returns of rooted plants varied with the season from 10 to 75 per cent. This method of propagation is expensive, tiresome, and unsatisfactory. A much better plan will be to secure a good pure lot of plants and keep them separate as much as possible. I would suggest the propriety of the Department of Agriculture, and others who have the distribution of plants in their hands, sending one "strain" of plants alone to given localities as much as possible: the Assam kinds to hot and moist localities, and the Chinese type to drier and more elevated situations. The system of selection which has been practiced with such success in the case of corn, tomatoes, and other plants should be carefully attended to in the propagation of tea.

THE PREPARATION OF THE SOIL.—The preparation of the soil for tea should be precisely the same as the preparation for any other farm crop. Secure the best possible tilth, manure well, preferably with vegetable manure. A crop of any cheap seeded legume plowed in would be excellent; but any available manure in which straw is incorporated would answer. Plow deep and well: even subsoil, where the experiment is intended to be thorough, and the land will bear it. Harrow and cross-harrow. Mark out the land 5 feet by 5 in straight lines, as for corn, and it is ready to receive the tea-plants, which plant at the intersections of the scoring. Or, if it be determined to grow the tea with some other crop, for instance, onions, turnips, tomatoes, melons, cucumbers, peanuts, low-growing peas, celery, or almost any crop which will not shade

the plants, then the latter may be planted either as subdividing hedges at any distance apart to suit the taste, or they may be planted within the fences. This plan is very extensively practiced by the Chinese, and is a great economy of labor, since then the tea needs scarcely any special cultivation other than that given to well-kept hedges generally. The plants may be almost any distance apart in the rows, between one foot and four. The hedges may be clipped, but a flat top is the most productive form as regards yield of leaf. I am supposing that from one to five hundred or more plants are to be planted for family use. When fully started the plantation of tea merely requires to be kept moderately well weeded, and in no case must weeds be allowed to overtop and shade the tea; it is a crop requiring the full sun.

PLANTING.—No especial directions are necessary further than to say that the plants must, if possible, be planted in the spring, in showery weather, and not too deep; any

Fig. —.



one who can plant a garden with success, can manage a tea-plant. A little shade may be useful if hot, dry, sunny weather ensues; a few small boughs, stuck around the plants, are all that is needed to prevent intense evaporation from the soil and plants. I may mention that in deep soils the tea-plant has a tendency to form a long, bare tap-root, somewhat resembling a root of salsify or carrot. The directions given as to germinating the seed on a hard bottom were intended to obviate this tendency to form a long tap-root, and start the plant in the way it should go, forming fibrous roots; but if perchance a long tap-root is formed in spite of all precautions, then, in transplanting, it must be got out as entire as possible, and more care will be necessary until the plant has commenced to make new

roots and growth in its new position. The kind of culture required while the tea-plants are reaching utilizable condition may be almost entirely performed by horse-labor, if the tea is grown in with other crops.

I am not urging the formation of extensive plantations as yet, and, consequently, I cannot pretend to regard the setting out and tending of an ornamental hedge as anything but very pleasant pastime for the intelligent farmer in his leisure hours. The base of the plants should be kept free of weeds, and when 6 inches of growth is made, the extremities of the shoots and the terminal bud and three leaves below should be pinched out; if this pinching is done in the growing season the operator will not only be bringing his tea-bush into a spreading shape by the process, but will also be taking off the very article which goes to make the bulk of the teas of commerce. This pinching of the 6-inch shoots should continue until the plants reach their third year, when a sufficient quantity of leaves will be obtained for manufacturing purposes.

The accompanying sketch will fully illustrate the pinching or picking process, together with various qualities of leaf employed in the manufacture of the pure teas of commerce:

BLACK TEAS.

1. Flowery Pekoc.
2. Pekoc.
3. Pekoc Souchong.
4. Souchong.
5. Congou.
6. Brick teas, &c.

GREEN TEAS.

- Flowery Pekoe.
 Young Hyson.
 Hyson and }
 Gunpowder. }
 Twankay.
 Brick teas, &c.

The shoots marked *o o* should be left at the base of all current growths for the production of future crops, and be allowed to grow to at least 6 inches before they are picked. The black lines below the leaves show the point at which the various grades of leaf should be separated.

PICKING OF THE CROP.—When the shrubs are about three years old there will be a sufficient quantity of leaves obtainable to warrant a muster of the women and children of the farm, each of whom should be instructed to nip off the young and tender growth with the finger and thumb, at the point indicated by Figure 4 of the sketch. The three leaves and terminal bud, together with the tender stalk, make the very finest class of Souchong teas, often ranking, if well made, as Pekoe Souchong, and worth at least \$1.50 per pound. If a coarser tea is desired, the young growth may be nipped out at the point indicated by Figure 5 of the sketch. Some may question the propriety of picking the stalk, but it is as tender as the leaves, and is invariably used except in Caper and Gunpowder teas. The leaves may be gathered in the apron or anything else; there is no more mystery about the matter than there is about gathering pease, or any other crop, it being only necessary to select the young growth, for the coarse leaves are not worth gathering; they will not make good tea, but the reverse.

Having briefly treated of the picking process, I will give a variety of methods by which both green and black teas are made. It takes on an average four pounds of raw leaf to make one of tea.

BLACK TEAS.—*Process No. 1.*—1. Picking the leaf; 2. Spreading two inches thick on mats, &c.; 3. Tossing in the hands, (as hay;) 4. Tossing on flat trays; 5. Examine for bruised red spots; 6. Place thin on mats, &c.; 7. Cover with cloth until fragrant; 8. Roasting on pan; 9. Rolling under the hands; 10. Drying over charcoal.

Process No. 2.—1. Picking the leaf; 2. Spreading out thinly; 3. Tossing in the hands; 4. Roasting; 5. Rolling; 6. Roasting; 7. Rolling; 8. Roasting; 9. Rolling; 10. Partial drying over fire; 11. Exposure to the air; 12. Picking out coarse leaf; 13. Final drying; 14. Packing.

Process No. 3.—First day and night: 1. Picking the leaf; 2. Spreading out thinly. Second day and night: 3. Exposure to air and tossing; 4. Roasting at 180° to 200° Fahr.; 5. Rolling out juices; 6. Roasting on pan at 160° ; 7. Rolling out more moisture; 8. Spreading out thinly. Third day and night: 9. Partial drying in sun or otherwise; 10. Picking out stalks, &c.; 11. Final drying. Fourth day, if convenient: 12. Sifting out dust, &c., 13. Packing.

Process No. 4.—First day and night: 1. Picking the leaf; 2. Spreading out thinly. Second day and night: 3. Exposure to sun, turning over, tossing, and picking out of coarse leaves; 4. Panning, at 180° to 200° ; 5. Rolling out juices; 6. Fermentation in heaps; 7. Spreading thinly. Third day and night: 8. Partial drying; 9. Picking out stalks; 10. Final drying. Fourth day, if convenient: 11. Sifting; 12. Packing.

Process No. 5.—1. Picking the leaves; 2. Wither in sun two hours; 3. Cool in shade one-half hour; 4. Toss and clap in hands ten minutes; 5. Cool one-half hour; 6. Toss ten minutes; 7. Cool one-half hour; 8. Toss ten minutes; 9. Roasting or panning; 10. Rolling; 11. Roasting; 12. Rolling; 13. Final drying; 14. Packing.

Process No. 6.—1. Picking the leaf; 2. Roasting; 3. Rolling; 4. Exposure to the air; 5. Final drying on the pan; 6. Picking out coarse leaf; 7. Sifting; 8. Packing.

GREEN TEAS.—*Process No. 1.*—First day and night: 1. Plucking the leaf; 2. Roasting on pan, at 200° ; 3. Rolling thoroughly; 4. Expressing the juice; (give it a squeeze in a cider-press!) Second day and night: 5. Slight evaporation of the juices in the sun or on the pan; 6. Drying on the pan, constantly stirring as the operation proceeds; the pan should be heated to 180° and allowed to get gradually cooler as the operation proceeds; 7. Picking over; 8. Winnowing or sifting; 9. Packing.

Process No. 2.—1. Plucking the leaf; 2. Roasting; 3. Rolling; 4. Expressing the juice; 5. Spreading the leaves thinly; 6. Partial drying on pan; 7. Sifting; 8. Spreading out thinly; 9. Final drying on pan.

Process No. 3.—1. Plucking the leaf; 2. Cooling, by spreading thin; 3. Roasting, at 150° ; 4. Rolling; 5. Exposure to the sun; 6. Expressing the juice; 7. Final drying on pan; 8. Picking out yellow leaf; 9. Sifting and classifying; 10. A hotter pan than the above is usually desirable.

Process No. 4.—First day and night: 1. Plucking the leaf; 2. Roasting; 3. Rolling. Second day: 4. Exposure to the sun; 5. Rolling on trays meanwhile; 6. Drying over charcoal fires if still wet; 7. Drying on pans heated to 150° , gradually cooling as the process proceeds to 140° and 130° ; 8. Sifting. Third day: 9. Finally dry on the pan until the desired color is obtained; 10. Pack while hot.

Process No. 5.—First day and night: 1. Plucking the leaf; 2. Spreading out thinly. Second day and night: 3. Panning for four or five minutes; 4. Rolling; 5. Partial drying in the sun or over charcoal fires; 6. Pressing out the juice; 7. Partial drying on pan for some two hours; 8. Press or squeeze the leaves in a bag so as to thoroughly get rid of the juices; 9. Further heating on pan to evaporate moisture. Third day: 10. Final drying on pan for six, eight, or more hours, until the required color is produced; 11. Sifting; 12. Packing.

The foregoing methods have all been practiced by the writer, and they will all produce first-class tea in certain conditions of the weather. No two days' work can be precisely alike as to the time the various operations require, no more than the operations of the hay-field occupy precisely the same time from year to year, but this is not

important. The great thing to understand at the outset is the principle of tea-manipulation, and this once mastered the practice may be modified to suit every one's circumstances.

The difference between black and green teas is entirely due to manufacture. Black tea is subjected to the oxidizing influence of the atmosphere, often for a considerable time; great chemical changes ensuing. The tannin, volatile oils, extractive matter, and sometimes the thein are very much toned down.

Green teas undergo great changes also, from the raw state, but the preservative qualities of moderate degrees of heat are brought to bear upon the leaves before they have been acted upon by the atmosphere, and the above chemical constituents, together with the coloring matter, are better preserved than in the black teas. Black teas are bruised, beaten, and tossed before drying; green teas are not. Black teas are like a well-bruised apple, laid over for a day or two and then dried in an oven. Green teas are like a sound one, dried in like manner. These are the chief differences; but to make the matter more plain it will, perhaps, be best to briefly state the method of procedure and the utensils required.

Tea for family use, either black or green, may be made if the farmer or other operator can muster a cook-stove, or even a fire on the floor, and a brick or two, over which to set an iron or block-tin pan, measuring 2 feet 4 inches in diameter and 7 inches deep; this is, perhaps, the most convenient size, but a smaller will answer perfectly well as long as the hemispherical form is maintained. This is the roasting-pan, and in it the raw leaves are heated so as to cause them to exude their moisture. The pores of the leaves open with a series of miniature explosions, causing a sharp crackling sound; this is a tolerable test of the heat; that is, the leaves should crackle, but unfortunately they will do so when the pan is red-hot and liable to burn out all the goodness from the leaf.

Whatever heating medium may be employed, whether sun, or fire, or their combinations, the leaves should be perfectly soft and pliable before they can be rolled without breakage. They should be moist enough to stick together. When in this state the leaves are thrown on a table on which a bamboo or rattan mat is nailed. The Indian matting used for covering floors will answer, or the table may be shallowly grooved. A board to be worked by the hands may be grooved in the opposite direction, the whole arrangement being somewhat like a pill-making machine on a large scale. Or a machine (of which there are several) may be used, where the operations are sufficiently extensive to warrant its use, for—

ROLLING.—This process has probably attracted more attention than any other part of the manufacture. The object is really to extract and press out the bitter juices, (probably tannic acid, &c.,) and it accidentally happens that the leaf receives the various twists seen in commercial teas. The Chinese manage this rolling almost entirely with the hands and feet. A ball of leaves is taken in the hands and rolled backward and forward, on the table, the pressure used being considerable; the leaves should become quite saponaceous, and when quite a quantity of juice is pressed out, and the leaves twisted, they may be pronounced properly rolled. It is a good plan to shake them out thinly after rolling, that the action of the air may evaporate the juices; and, in the case of black tea, oxidize the leaf. Some operators allow the leaves to stand in balls for a time, others warm them on the pan again; some place them in the sun, others in the shade; some place them in heaps to ferment, both before and after rolling. In short, the various methods by which good tea may be made are simply innumerable, but the principles of desiccation and manipulation must not be violated. What those principles are must in nearly every case be determined by practice; for beyond the recapitulation of the process as given, little more is known. I have frequently proposed the analysis of the leaves of tea in their raw state to the government chemists in India, but I believe it has not yet been undertaken; consequently the effect of exposure, heat, and pressure upon the leaves can only be conjectured. It would probably aid the inquiry very materially if a good manipulator could co-operate with a careful analytical chemist, who, for the sake of science, would be willing to investigate the various changes produced by manufacture.

The business of the farmer, after rolling and expressing his tea in various ways, suited to his fancy or convenience, will be finally to dry it over charcoal fires or on the iron pan. The latter will invariably produce a tea of stronger quality, partaking more or less of the characteristics of a green tea, even though black in color. When the tea is thoroughly dry it may be packed in wooden or tin boxes, always taking care they are perfectly dry and air-tight.

THE BEET-SUGAR INDUSTRY.

Mr. Edward L. Cull, of Toronto, Canada, furnishes the Department a second article on the beet-sugar industry. In this he especially urges upon the attention of farmers the advantages arising from the conversion of the beets into crude sirup upon the farms where raised, and, in that shape, transporting to the refiner, rather than the beets themselves in bulk. With the view of facilitating the process, and of bringing it within easy reach as to cost of appliances, he suggests and describes certain desirable machinery. The considerable attention being paid in some parts of the country to the subject of sugar-beet production will continue to excite still further discussion concerning the cheapest and more available methods of cultivation and conversion into commercial sugars and sirups. Mr. Cull writes :

Allow me to suggest to the Department that the best possible method of helping forward the manufacture of beet-root sugar would be the establishment at the various schools of agriculture and of technology in the country of a rough-and-ready set of utensils such as a farmer on a large scale, or the small manufacturer, is accustomed to use. If the sirup is made in accordance with the instructions concerning the use of such utensils, which I have already given in a pamphlet entitled "The Whole History and Mystery of Beet-Root Sugar," it will be fitted for the operations of the refiner, and will, under his treatment, yield without difficulty the maximum of sugar, as also of potash and other salines, all of which are equal in value to the sugar, at least, weight for weight. Sirup can be prepared on farms and in their immediate neighborhoods to much greater advantage by the farmer or the small manufacturer than by proprietors of large refining-works, the latter requiring, to do business on a profitable scale, the products of a far larger amount of roots than can be grown within hauling distance of the refinery. The refiner must carry on his business from one year's end to another—perhaps night and day : and by so doing will refine many hundred tons of sugar in the course of a year. His business is quite complicated enough without including the growth and reduction of the roots, the feeding of cattle, and the production of the general crops, which are required on all land devoted to the raising of one principal crop, inasmuch as all land, however good, requires the amelioration afforded by extra tillage and the careful application of the elements which go to the support of cereals. Even if the refinery is fully supplied with the rough beet-sirup, it must embrace several distinct branches of manufacturing : first, the production of refined sugar ; secondly, the production of alcohol from the molasses produced, which is too full of saline particles and other impurities to be profitably used without this elimination ; thirdly, the production of salines, such as potash and soda, from the wash, after it has given up its alcohol by the processes of fermentation and distillation. These three processes convert the rough sirup into three separate and distinct articles of great commercial value, and are quite sufficient to engage the attention of the capitalist. On the other hand, the farmer produces the root as one of his ordinary crops, excellent in carrying out a system of rotation. Conversion by himself of the roots into rough sirup would afford him occupation during the winter, and supply a most valuable auxiliary food for his cattle during the time he is fattening them, as well as a highly nutritive aliment for his milch-cows and young cattle and sheep. If he can produce more of this food than required for these purposes, he stores his cakes of pulp for summer use to help his stock over the droughts of summer and the failure of the pasturage with which our American climate is so often afflicted. The leaves of the beet not only afford him a valuable food for his cattle during the time he is storing his roots, but also an excellent coat of manure for the succeeding crop. The farmer need not be over particular about getting the last drop of juice from his roots—it is this which requires powerful machinery ; if he does not get the last drops his cattle do, and there is no waste ; whereas, in the hands of the great manufacturer who grows his own roots, the whole of the juice must be extracted, even that remaining in the pulp being washed out with water ; otherwise the loss becomes ruinous.

The farmer would grow more roots than he now does if he could get an immediate and profitable return for them ; but, as now too often situated, few only can command sufficient capital to procure the necessary cattle for the food at hand. Could farmers feel sure that the sugar-beets they might grow would not only provide a means of feeding their cattle, but also produce in sirup from \$45 to \$65 to the acre of roots produced, they would very soon put a different face on their farms, and the increased returns, including the manure increment, would enhance the fertility of the land, and

produce the effects witnessed in all beet-growing countries, that "wherever beets are grown for a sugar-crop there the produce of the land is more than doubled" not only in money-value from the sugar-crop, but also from the quantity of wheat and other grains, and of meat, which also is doubled. This has also been especially shown in France, in the Département du Nord, where the amounts of cereals and meat have been more than double since the beet-root sugar industry became established.

How can this end be accomplished? All that the farmer will require in addition to his ordinary utensils is as follows: 1. A common wooden cage, such as any carpenter can make, to revolve in a trough, for washing the roots; 2. A rasp to be moved either by steam or horse-power, for reducing the roots to a pulp; 3. A common press, made with either screws or levers—a cider or cheese-press will answer; 4. Cloths of hemp canvas in which to envelop the pulp for pressing; 5. A boiler made of iron and wood, similar to those used in the West for boiling the juices of the maple, and of sorghum; 6. A simple filter for filtration of the juices after defecation; 7. A machine for carbonizing the lime in the juice; this is a very simple affair and not costly; 8. The evaporating-boiler—the same as mentioned in No. 5, above.

With these requisites, all that has to be done by the farmer is to evaporate the defecated and clear juice down to proper consistency. It may then be run into casks, and will keep any length of time, and can be as easily carried to market as sacks of grain, a barrel of black salts, or a barrel of pork.

FACTS FROM VARIOUS SOURCES.

EXPERIMENTS WITH WHEAT ON THE EASTERN FARM OF PENNSYLVANIA AGRICULTURAL COLLEGE.—The superintendent of the eastern experimental farm of Pennsylvania Agricultural College, located in the county of Chester, makes the following report of experiments with wheat of several varieties during the season of 1872-'73:

The ground used was an oat-stubble, with a coat of barn-yard manure plowed under and surface application of dissolved-bone and ashes compost, put on at the rate of four hundred pounds of dissolved bone and eight bushels of tan-ashes per acre, harrowed in.

The seed was sown broadcast, at the rate of two bushels per acre, on the 20th of September, 1872, and the wheat cut from July 9th to 14th, and thrashed July 15th to 20th.

The wheat was weighed when run through the fan once, and not entirely clean, but as the rakings of the plots were not included in the weights the results would not be seriously altered by the second cleaning. The plots contained one-eighth of an acre, with a space of two feet between them.

No.	Kind.	Color of grain.	Smooth or Bearded.	When ripe.	Pounds of straw.	Pounds of grain.
1	Lancaster Red.....	Red....	Bearded..	July 10	370	230
2	Rough and Ready.....	Red....	Both.....	10	521	271
3	Brittany.....	Red....	Bearded..	10	300	220
	Boger's.....	Amber..	Smooth...	14	455	261
	Week's White.....	White...	Bearded..	9	347½	216½
6	Touzelle.....	White...	Bearded..	14	442	213
7	Fultz.....	Red....	Smooth...	9	503½	282½
8	Jenning's.....	White...	Bearded..	9	454½	223½
9	Shoemaker.....	Red....	Smooth...	12	461½	228½
10	Tappahannock.....	White...	Smooth...	9	276½	147½
11	Arnold's No. 9.....	White...	Smooth...	10	441½	204½
12	Kansas.....	Red....	Bearded..	11	399½	220½
13	Dot or Paducah.....	Red....	Bearded..	9	437	226½
14	Lancaster Early.....	Red....	Bearded..	11	426	240
15	Way.....	Red....	Bearded..	11	430	260
16	Old White C. M.....	Red....	Bearded..	11	400	225

EXPERIMENTS WITH FERTILIZERS ON WHEAT.—These experiments were made upon wheat-stubble ground, upon which barnyard manure had been used for previous crop. The fertilizers were applied at the rate of \$12.50 worth per acre; put on the surface, and harrowed in on the 14th of September. On the 18th of September one and one-half bushels per acre of Fultz wheat was drilled in. Plots contained one-eighth of an acre, with two-feet of space between the rows.

	Pounds of straw per $\frac{1}{2}$ acre.	Pounds of grain per $\frac{1}{2}$ acre.
1. Bone and ashes compost*	345 $\frac{1}{2}$	228 $\frac{1}{2}$
2. Dissolved South Carolina rock†	39 $\frac{1}{2}$	257 $\frac{1}{2}$
3. Kainit or German potash salts	337	223
4. Professor Ville's wheat-food‡	421	251
5. Nothing	320	190
6. Ground bone on surface	353 $\frac{1}{2}$	222 $\frac{1}{2}$
7. Ground bone, one-half on the surface and one-half drilled in with the wheat	400	238
8. Ground bone, all drilled in with the wheat	448	252

* The bone and ashes compost was made of one ton of ground raw bone, 340 pounds of sulphuric acid, and 50 bushels of unleached tan-ashes.

† The South Carolina rock was treated with 700 pounds of sulphuric acid to one ton of rock, and cost \$30 per ton.

‡ Ville's "wheat-food" was made as follows for one-eighth of an acre: 20 pounds pure bone phosphate, 10 pounds saltpeter, 12 $\frac{1}{2}$ pounds of sulphate of ammonia, 15 pounds of calcined plaster.

The dissolved South Carolina rock spoken of above also did better on grass this season than any other of twenty fertilizers used.

Experiments in manner of seeding wheat.—These experiments were made on plots containing one-sixteenth of an acre, all treated alike and put in September 18, except plot No. 1. The drilling was done with Brickford and Huffman's drill.

	Pounds of straw.	Pounds of grain per $\frac{1}{16}$ acre.
1. Drilled 2 $\frac{1}{2}$ inches deep, September 28	106 $\frac{3}{4}$	62 $\frac{1}{4}$
2. Broadcast and harrowed in September 18	150	90 $\frac{1}{2}$
3. Drilled in 2 $\frac{1}{2}$ inches deep, September 18	130 $\frac{1}{2}$	82 $\frac{1}{2}$
4. Drilled $\frac{1}{2}$ inch deep, covered with roller, September 18	127 $\frac{3}{4}$	77 $\frac{1}{4}$
5. Drilled 4 inches deep, September 18	118	71
6. Drilled 1 bushel per acre, September 18	124	75 $\frac{1}{2}$
7. Drilled 2 bushels per acre, September 18	131 $\frac{1}{2}$	87 $\frac{1}{2}$

From the experiments of the past two seasons I would suggest to farmers to try the Fultz wheat, just enough to show its suitability to their soil and circumstances. With us it has proved a hardy, stiff-strawed, early, and productive wheat; grain small but reasonably plump. The Rogers is also a fine wheat, not so productive or early as the Fultz, but a better quality of wheat, and would probably do finely on strong ground, or with high manuring.

The action of different fertilizers is too uncertain to warrant the recommendation of any particular one, though the general result of their use with us has been favorable.

From our experience with fertilizers on various crops this season we have decided to use principally the following preparation, giving the quantity for one acre:

225 pounds dissolved South Carolina rock, at 1 $\frac{1}{2}$ cents per pound	\$3.37 $\frac{1}{2}$
44 pounds sulphate of ammonia, at 6 $\frac{3}{4}$ cents per pound	2.97
88 pounds muriate of potash, at 3 cents per pound	2.64
Cost per acre	8.98 $\frac{1}{2}$

These should furnish the three most valuable ingredients in all fertilizers, the phosphate, ammonia, and potash. This we propose to apply in addition to a light coat of yard-manure, plowing both down as soon as possible, and drilling in the wheat about the middle of September.

GARDENING IN SAN DOMINGO.—Dr. R. F. Dennis, writing from Puerto Plata, San Domingo, under date of the 18th of August, furnishes the following interesting account of his experiments in the cultivation of a variety of garden-seeds which were forwarded to him during the last year from this Department:

Rich in fruits and food products, the tropics seem very deficient in number and variety of garden-vegetables, as compared with the temperate regions. Sweet potatoes, yams, manioc, beans, egg-plant, tomatoes, okra, squashes, and peppers are the principal. Of the sweet potato one soon becomes tired, and neither it, nor the yam, nor the manioc, is any substitute for the Irish potato. The native tomatoes and egg-plant, although vigorous and productive, are far inferior in size and quality to the improved varieties of northern gardens. The squashes also are small, unproductive, and poor in quality. Hence our desire to introduce and test a number of new vegetables and new varieties.

With a true tropical climate—latitude about 20° north, within a mile and a half of the sea, and only a small elevation above it—and a good soil, of a clay loam, very rich in vegetable matter, on a subsoil of coralline clay, we had a good prospect the past year of making a fine trial of many seeds and plants, but, unfortunately, the season was unfavorable, there not being sufficient rain. The usual rainy season here being November, December, and January, there are properly two seasons of planting, and only two: one in the fall, at the beginning of the rains, for some few things; the other, and the best for most, in the early spring or first part of February.

The first trouble of the gardener here is in the preservation of seeds. One difficulty being the great heat and moisture of this climate; the air being always very damp, even in this drought of two years, it being difficult to dry anything except at midday; and, second, the weevil, which is very numerous and destructive. Fresh seeds from the North, in good paper packages, pasted tightly, will, with care, keep a few months, but spoil quickly after being opened. The natives here have two ways for the preservation of their own seeds. First, after drying them well in the midday sun, shutting them up in tight vessels, putting corn in demijohns, and small seeds in bottles, with some fresh, dry wood-ashes mixed with them. Our own experience with these bottled seeds is not very favorable. The second way is, after gathering one crop, to immediately replant and have some always growing, and thus "save the seed." This is not possible with everything; and even when successful is very objectionable, for planting out of season quickly causes degeneracy. And so we find all through this country; everything that can degenerate has done so; and everything that can mix has done so; no care being taken to plant any varieties separate. No budding nor grafting being practiced, but all fruits planted from the seed, the same thing has happened with them, and poor varieties are the rule.

Next as to planting. The earth here being one vast hot-bed, all good seeds sprout very quickly, provided they have the proper degree of moisture. But a tropical sun soon parches the surface of the ground, and thus frequently destroys the small ones, and generally such must be planted at twice the depth they are at the North. Covering them with boards, &c., a short time at first, will not generally answer here, as the ants often destroy all under such shelter. Contrary to the report of some, insects destructive to vegetation are wonderfully numerous and active. This is not strange, for, first, they have the whole year to feed and multiply; and second, the people here carry on such a continued hunting against all birds—even the mocking-bird being considered game—that none will come near a house or a cultivated field. Cut-worms, beetles, caterpillars, aphides, ants, &c., &c., of the North, all have their congeners here. Even of the curculio, there is a variety that stings nearly every guava in the country.

If plants escape all these enemies, with this rich soil, it is wonderful how the damp air of this climate, with the dews of night and a very few light showers of rain, will keep all green and growing during the long, hot summer under a torrid sun.

Our plantings were made in both fall and spring, or October to December and in February. The northern vegetables proper succeeded best in the fall planting; others, as tomatoes, egg-plant, melons, &c., in spring. Of varieties, the *early* kinds seemed to succeed much the best. Irish potatoes planted in November grew well as to top, but failed as to tubers; probably the earth itself is much too hot for their growth.

Cabbage (late varieties) was a partial success, but would not be considered to pay for cultivation in a northern garden. Turnips did well as to growth and size, but had a strong rank flavor. Beets were a decided success; both fall and spring plantings growing to a good size and being of a good quality. Radishes also were fine, both plantings, and some seed even was obtained from old ones. Asparagus, carrots, and salsify surprised us by making an apparently vigorous growth, but the roots were small. Onion seed nearly all failed to germinate, and the few growing never acquired any size. Of the parsley (although badly adulterated with grass seed) some came up and made very fine plants. New Zealand spinach flourished in the cool or wet months, but died in summer. Of the melons proper, the Persian, casaba, pine-apple, &c., were almost a total failure; from a few poor fruit, however, some seeds were saved to try another year, and again to see if, according to the theory of some, they will come true and good in the third year after a change of climate. Phiney's Early watermelon succeeded well; very productive of fruit and this of good quality, much surpassing the mixed native varieties here. Patagonian squash failed; Hubbard grew well, and

bore a large number, but did not ripen perfectly. Sugar-corn grew only two feet high and produced nothing. Several varieties of northern beans yielded only a small crop. Peas ditto. Northern egg-plant seed nearly all failed to germinate, and the few growing bore only small, poor fruit. Tomatoes (Trophy) did better, but not equal to those at the North. Peach-pits failed to sprout. Generally the change of climate seemed to produce a more diminished growth, a premature ripening, and a short crop, with smaller and more imperfect fruit or seeds. With such as were saved we intend to re-plant the coming season, to see if they will improve.

These trials being near the level of the sea, others, in the interior, at a higher elevation, may show better results.

PEANUT OIL-CAKE AS A FOOD FOR ANIMALS.—It has long been known that the greatest value of the ground-nut, (*Arachis hypogea*), or peanut, as it is familiarly called, is in the oil which it contains. Analyses made in this Department have demonstrated that the nut, under favorable circumstances of cultivation, will yield at least 16 per cent. of oil; and it has been found that for alimentary, mechanical, and illuminating purposes, the oil is scarcely inferior to that of the almond, the olive, or the linseed. The amount of oil varies according to latitude. The nut is grown in almost all the warm climates of the world, and especially in Algeria, where it is indigenous, and where the plant appears to thrive more vigorously than elsewhere, and to afford much more oil. While in Virginia, for instance, the average yield of oil is 16 per cent., the Algerian growth is said to afford 25 to 27 per cent. It has been shown by experience in this country, in different sections of which the nut has been cultivated, that under judicious management it will produce from 50 to 75 bushels to the acre. But although it is susceptible of easy and cheap cultivation, and is grown in this country in very large quantities, the chief value of the production is almost entirely overlooked, and the crop is monopolized by the fruit-stands at the corners of our city streets. In the East Indies, and in the south of France and the countries of Mediterranean Europe and Africa, the nut is grown almost exclusively for the sake of the oil; the seed is pressed to obtain the oil, and the pressed cake, or marc, is used as a food for cattle, and in some instances is exported to Great Britain to be employed as a manure.

A series of experiments in feeding cattle with peanut oil-cake has recently been made upon the government experimental farm in Madras, British India. The official report of these experiments is both interesting and instructive. The experiments were peculiarly satisfactory in respect to draught cattle, which were found to thrive much better upon the peanut oil-cake than upon the ordinary food, and at a reduction of one-half in the cost of feeding. The cake is steeped before being fed to the cattle, and four pounds per head are allowed daily.

The following analysis of the peanut oil-cake will show its properties:

	Per cent.
Moisture.....	10.80
Oil.....	8.12
* Albuminous or flesh-forming compounds.....	28.62
Mucilage, gum, &c.....	18.86
Cellular fiber.....	29.09
† Ash.....	4.51
Total.....	100.00

For the sake of comparison the following analysis of the linseed oil-cake is given:

* Containing nitrogen, 4.50.

† Containing sand, 1.40.

	Per cent.
Moisture.....	10. 67
Oil.....	12. 87
*Albuminous or flesh-forming compounds.....	28. 12
Mucilage, gum, &c.....	27. 01
Cellular fiber.....	14. 11
†Ash.....	7. 22
Total	100.00

It will thus be seen that the peanut oil-cake is very little inferior to the linseed oil-cake, the cost of which is five-fold that of the peanut. As a food for horses the peanut oil-cake was found by these experiments extremely valuable, the feeding during two years being attended with the most gratifying results. Experiments were also made to ascertain the relative values of peanut oil-cake and Indian corn as foods for fattening pigs, and to ascertain the cost of producing a pound of pork. Four pigs of equal age and size were selected for an experiment, two being fed upon 4 pounds of peanut oil-cake daily in addition to the ordinary food, and two upon 4 pounds of corn instead of the oil cake. In eight weeks the former had increased in weight 99 pounds and the latter 89 pounds; from which it appeared that the peanut oil-cake is more valuable than Indian corn for producing pork. The cost of the corn was about double that of the oil-cake; that is to say, the corn averaged about one cent a pound, and the oil-cake half a cent.

EXPERIMENTS IN FRUIT-CULTURE IN NORTH CAROLINA.—Mr. J. L. Labiaux, of Ridgeway, North Carolina, writes to the Department as follows, concerning the culture of the French grape and other fruits in that State:

My enterprise, viz, the introduction of the French grape here for table use, and principally for wine-making, is a success, as I had good reason to anticipate. We planted last April and May 70,000 cuttings, a few of which are already bearing perfect bunches of fruit, (which, however, I do not think will attain perfect maturity.) This proves that in this climate and soil French plants and French experience in vine-culture well agree. Next winter and spring we intend planting 100,000 or 125,000 additional cuttings.

Permanent success, however desirable, is scarcely to be expected on the Atlantic slope in vineyard-culture of foreign grapes. It has been sought for more than a century, without anything more than a very short-lived success. Climatic conditions render it impossible, in ordinary open-air culture of the principal European varieties. It would be important to know that a single variety, with any mode of treatment, had yielded abundant fruit even for a few successive years.

In regard to other experiments being made, Mr. Labiaux says that an attempt to cultivate madder, from very doubtful seed, however, met with no success. Almond, fig, and olive plants—the latter cuttings, the first and second three-year trees—are doing very well.

KEEPING GREEN CORN.—The following inexpensive mode of preserving corn for table use after its season has passed is suggested by an experimenter: Dip the ears into boiling water and let them remain about two minutes; take them out, and when cool cut the corn from the cob and dry it, just as you would dry fruit, and when dry put it away in clean paper-sacks. By this means one may enjoy the luxury of green corn at any time.

HUMUS AND FERTILIZERS.—The Southern Cultivator publishes a communication calling the attention of planters who have used commer-

*Containing nitrogen, 4.30.

†Containing sand, 1.18.

cial fertilizers to the condition of their crops, with especial reference to any difference observable in the size and growth of the cotton-plant in the same field, manured, cultivated, and in all respects treated alike, or on land which, to superficial observation, appears to be the same in different fields. It is desirable to know why the same amount of fertilizing produces a much better effect on one field than on another, both seeming, to casual observation, to be the same in quality. Giving his own experience in the matter, the writer says:

I rented to a freedman an old field which has not been cultivated in fifteen years. It was utterly exhausted before it was turned out, and was as poor as it could be. It grew broomsedge until the pines sprang up, and then the grass and pines grew together. My cattle ran on it. The freedman cut down the pines, plowed the land twice with a scooter, and with a small plow made what he called beds, and in shallow furrows, made with a scooter, scattered about 150 pounds fertilizer to the acre, and upon it dropped his cotton-seed, and covered with a board. On an adjacent field of the same quality of land originally, but which had been kept in cultivation, and more or less manured every year, I planted cotton, plowing deep with a two-horse Dodge plow, and applied 200 pounds of ammoniated phosphate, with ten bushels rotten cotton-seed to the acre, and cultivated well. The freedman's cotton is better than mine. Why? Because his ground had vegetable matter derived from the broomsedge and fine straw, of which my field had been deprived by continued cultivation. I conclude, therefore, that fertilizers put on land, no matter how liberally, without a due supply of humus, that is, vegetable matter, is thrown away. And the complaints we often hear of the worthlessness of the fertilizer is due to this cause.

As further illustrating the opinions obtaining in the South on this subject, the result of experiments made under the direction of the Hancock, Georgia, Agricultural Club may be referred to. The object was to contrast the effects of commercial and home manures. Two home composts were used, one in which 500 pounds of concentrated soluble phosphate was composted with 1,300 pounds of stable manure, and 200 pounds of ashes added just before using; a second, 1,400 pounds stable manure, 300 pounds superphosphate, 200 pound green cotton seed, 60 pounds sulphate of ammonia, and 40 pounds nitrate of soda. The commercial fertilizers employed in the experiments were five in number, of those more commonly used in the South. The following results were reported from experiments made with cotton:

Name.	Pounds to acre.	Cost per acre.	Yield per acre of seed-cotton.
			<i>Pounds.</i>
Logan (home) commercial.....	230	\$1.38	675
Home commercial	200	2. 00	720
Nothing	200	0. 00	490
A. A. Ober	0	7. 00	600
Ober's superphosphate.....	200	6. 00	675
Pendleton	200	6. 60	705
Zell	200	5. 75	645
Atlantic phosphates	200	5. 35	645
Five commercial mixed	200	6. 35	735

The experiments during two years obviously pointed to the fact that manures having carbonaceous matter in the form of humus act better upon the soils destitute of vegetable matter, such as are a large proportion of southern soils, reduced by repeated cropping in corn and cotton, both of which tend to humus destruction. The commercial manure acts chemically upon the soil which has little but mineral elements left, and the result is often, especially in dry seasons, disastrous to crops. But home composts act both chemically and mechanically. The conductors of the experiments draw a lesson from them, that they plainly show the necessity of either a rational rotation of crops, including small grains and rest, or a resort to turning under green crops, such as peas and clover.

FARMERS' DAUGHTERS AND POULTRY-RAISING.—The following statement of profitable poultry-raising by a Delaware farmer's daughter is reported:

In Concord, a farmer's daughter, during the past year, had the care of his poultry-yard. In the spring she commenced with about 60 fowls, of the common breeds, including one Dominique rooster and several hens of that stock. She also had two roosters of the Partridge-Cochin breed. From these she raised 350 chickens. When young she fed on cracked corn, but when fattening them, gave whole corn and Indian meal. During the season she sold eggs to the amount of \$90, and from September 20 to January 17, she got ready for market 150 pairs of chickens, which she sold for \$260. She thinks the Dominique much the best for market, but they are not hardy when young. She has some hens of the Partridge-Cochin breed which weigh 6, 7, and 8 pounds each. It will be seen from this statement what may be done by proper attention to poultry, the profits being perhaps larger than any branch of farming. It also shows that the business is one in which females may engage with success. The time occupied in caring for 60 to 100 hens doesn't average more than an hour or two a day. The exercise is light and pleasant, and the change from household duties rather agreeable than otherwise. Indeed, we consider the poultry business, as an occupation, both profitable and interesting. Gathering eggs, setting the hens, watching the hatching, and tending to the young, have a charm, which, in connection with the profit, is calculated to please every lover of nature's great working world.

FULTZ WHEAT.—In Yates County, New York, a careful experiment was made by a correspondent of the Department with Fultz and Treadwell wheats, with reference to testing their respective merits. During the summer of 1872, an eight-acre field of gravelly loam, which had been cultivated the previous year in fodder-corn, was summer-fallowed. The field was manured in 1871 and 1872, in the latter year the manure plowed under at first plowing. Upon a plot of one-eighth of an acre of this ground, five quarts of Fultz were sown broadcast, September 10, 1872. Treadwell was drilled upon the remaining part of the field, September 18, at the rate of two bushels per acre. The former was harvested July 7, and yielded four and a quarter bushels, or thirty-fold upon its seed; the latter was harvested July 25, and yielded twenty bushels per acre, or tenfold upon its seed.

HOG-DISEASE.—A correspondent in Jefferson County, West Virginia, says:

A disease among the hogs is prevailing in the county. It is called "cholera," as that is the name given generally to all diseases to which hog-flesh is heir. A very large number have fallen victims within a few days. As yet, no effectual remedy has been found. Some of the hogs are affected with a stiffness of the jaws and loss of appetite. The first is not usual in cases of cholera, I think. I have seen some hogs quite sick with cholera eat very greedily, and others, apparently with a similar affection, entirely refuse food.

DRILLING WHEAT.—A farmer of Scott County, Illinois, urges the practice of early planting with the drill, if wheat is to be made a profitable crop in that section. Where this is done from twenty to thirty bushels per acre are raised; whereas late and broadcast sowing usually yields a return of from four to eight bushels per acre, and not of the best quality at that.

CLUB-FOOT IN CABBAGE.—A farmer of Cambria County, Pennsylvania, suggests, concerning the remedy of "club-foot" in cabbage, the following:

I mention the circumstance of a German market-gardener, who, in putting out his cabbage, followed the German custom of "puddling" the roots of a part of his plants in a thin mixture of cow-manure and water. Five rows thus treated entirely escaped disease, and are, at this writing, growing prosperously, while the remaining portion of the crop, 1,400 plants, is all dead.

IMPROVIDENT CREDIT SYSTEM IN THE SOUTH.—A Georgia correspondent states that the farmers in his section will find it impossible to

pay for the provisions and fertilizers purchased last spring, for which, in many cases, the crop was mortgaged. This system still embarrasses cotton production in several of the cotton States.

PERPETUATING VARIETIES OF SEED.—The Bledsoe County, Tennessee, Farmers' and Mechanical Association has adopted the very judicious plan of requiring every member who has received seeds for experimental purposes, (those transmitted by this Department,) to return at least as much to the society as the quantity received, if the experiment turns out favorably. In addition to the convenience of having the seeds of valuable varieties on hand for seasonable distribution, the advantages of gradually acclimatizing seeds are gained. As opposed to this provident method, a Virginia correspondent cites the fact, that in his neighborhood many persons are always anxious to get *choice* varieties of seeds when first introduced, with grave promise of submitting them to the fairest tests; but, the novelty having worn off, or indifference to the objects of the distribution supervening, nothing more is heard of them, unless, perhaps, in some cases where the farmer, not having been diligent and conscientious in cultivating the seeds, meets failure, and denounces what he has received as worthless. In this connection a printed circular of the Department touching the subject may be quoted, for the information of a large class who apply for seeds:

The object of the Department is to distribute seeds as widely as possible; and, if they prove valuable, it is expected that their product will be saved and distributed to others by the first recipient. It is impossible, therefore, to supply many persons in the same vicinity, nor will those who do not save the seed, as above suggested, be entitled to further supplies.

GLUTEN GRANULES.—Mr. Nahum E. Ballou, secretary of the Union Agricultural Institute, at Sandwich, Illinois, furnishes the Department with the following notice of a discovery by which an element of wheat, hitherto cast away in the bran, has been rendered available for a very useful purpose. The discoverer, who is a Frenchman, and a resident of Minneapolis, Minnesota, gives to the product in question the name of gluten granules. Mr. Ballou says:

The gluten granule has been found, upon experiment, to be the most valuable product of wheat, because most nutritious. Mr. Janen, the discoverer, and others associated with him, have already secured patents of machinery whereby this element may be successfully separated from the offal of the mill, which has hitherto been considered of little value. The product is most abundant in hard and flinty varieties of wheat, which, when ground by a process known among millers as high grinding, takes only from the wheat the very best quality of flour; then the process of separating the gluten granules is conducted by means of separators devised to receive the offal, and eliminate the most valuable portion of the wheat, which is in the form of minute granules. These granules are then ground into fine flour, and prove to be more valuable for bread than the flour originally taken out; for the reason, undoubtedly, that nitrogen exists largely in this portion, constituting the glutinous element. It is, in fact, this separated element that gives toughness and tenacity to flour, which exists more abundantly in some than in other brands, rendering it at once available in cookery for viscid pastes, macaroni, and vermicelli. It is the very element for supplying the waste of the tissues of our bodies, and hence this product is now being eagerly sought for on account of its valuable properties. Probably it has also a tinge of the phosphates, said to be incorporated largely with the bran. Bread made from this new element is decidedly more nutritious than bread made from the common flour, while it is moister, and, withal, pleasanter to the taste. The writer of this has occasionally seen hints during many years that the most valuable portion of the separated elements of wheat was diverted from its legitimate use. As an evidence that these ideas or hints were not without foundation, we instance that bran fed freely to a milch-cow not only improves the quality, but the quantity of milk also. This lately-ascertained property, valuable as an element of food, and hitherto considered of little value, is likely to assume a prominent place in the world's exchange as an article of commercial value; nor will millers fail to secure an additional profit in the manufacture of flour by attention to it.

FOOT-AND-MOUTH DISEASE.—The United States consul at Kingston, Jamaica, Thomas H. Pearne, transmits to the Department the following article on this disease:

It appears that in England and its West India dependencies the foot-and-mouth disease is increasing in extent and virulence. This vesicular disease must run its course, and it is therefore not desirable to resort to violent remedies, which may arrest it in its several stages toward a termination. Slight attacks of infectious diseases will require no artificial aid; but where the action of the poison in its attempts to escape makes a severe call upon the strength of the animal, the failing powers must be supported while the elimination of the virus goes on. But there must be no unnecessary addition of stimulants, which are not safe except in the last stage of prostration. From the first, there must be pure air and water, and nutriment easily assimilable. Protection from the weather must be looked to. If the temperature is moderate, the animals need not be taken from pasture, except those badly affected in the feet; to these much exercise is hurtful. Water may be given freely. So long as the animals can crop the grass, or eat hay and roots, no care is necessary; but when the appetite fails on account of soreness of the mouth, considerable care is required. Good nursing is now necessary. Pulped roots should be placed in reach of the animal, and, at times, a little hay may be gently placed in the mouth. Gruel and linseed-tea are only to be used when solid food is persistently refused, and in giving these a horn or bottle should be used, but with great care, to avoid hurting the tender mouth. The mouth may be washed with a lotion of chlorate of potash, made by dissolving one drachm of the salt in a pint of water; the feet may be syringed with a solution of common niter, made by dissolving an ounce of niter in half a gallon of water. At the same time, all the animals of the herd may be placed under the antiseptic influence of hyposulphite of soda, or carbolic acid. The hyposulphite may be given in the drink-water, about one-half ounce to a gallon of water. Each animal should have about two ounces of the hyposulphite per diem. The atmosphere of the inclosures may be charged with carbolic acid in the form of vapor. In case of acute fever, indicated by high temperature, hot and dry muzzle and horns, with redness of the visible mucous membrane and constipation, saline laxatives may be carefully administered. The dose should not exceed eight ounces of sulphite of soda or magnesia, and if it is thought necessary to repeat it, not more than half the quantity should be given. Ulceration of the secreting membrane of the feet will require the application of caustic, or undiluted carbolic acid. Afterward use a dressing of tar, and a bandage, to prevent movement of the loosened horn, otherwise complete separation may take place, crippling the animal for weeks or ending in fatal exhaustion. As a safeguard against infection, there should be isolation as complete as possible. Persons in charge of herds should not visit neighboring farms. No curious investigators should be permitted to examine the animals; dogs must be banished. Fat stock should promptly be sent to butcher or market. Neither butchers nor drovers will be allowed on the farm. Next to isolation in importance is disinfection. To some extent this may be done by the use of carbolic acid, or chloride of zinc, or sulphurous acid; the first is the most manageable and least dangerous. Sprinkle the floor of the cow-shed with the acid, or mix one part of carbolic acid with forty or fifty parts of water, and with this saturate a quantity of sawdust and scatter it on the floor. Dip cloths in the solution and hang near the doors and windows. Quicklime may be spread at the entrance, to meet the possible danger from any one entering after treading on the manure of infected animals. The following recommendations are made:

The mouth to be scoured out with strong salt and water, (brine,) then washed out several times a day with carbolic acid and water in proportion of one pint to sixty, (one to forty too strong,) and when tongue and inside of lips are stripped of skin, use a mixture of borax and honey. As the animals at this stage will be unable to feed, they must have corn-meal and molasses, given either in balls or as a drench.

When bladders appear on tongue, lance from end to end. *Wash*: One-eighth of a pound of alum, one-eighth of a pound of niter, one quart molasses, three quarts soft water. *Ointment* to be applied to gland, throat, chest, and mid-flank: Hog's lard, (fresh,) one pound; olive oil, half pound; camphor, quarter of a pound; oil of turpentine, half ounce. The animal to have cooling medicines. No corn to be allowed, neither is the animal to be cleaned when disease prevails. Soft food to be provided.

GREAT SHORT-HORN CATTLE SALE.

The herd of Hon. Samuel Campbell, of New York Mills, New York, was sold on the 10th of the present month to distinguished breeders of America and Great Britain, who contested the possession of the famous Duchesses so warmly as to push prices to an unprecedented height. A marked degree of interest was manifested in this sale throughout England, from its first announcement.

The following list, published in the Country Gentleman, (except an omission of a calf of Lady Bates 4th, which is added) and vouched for as correct by the proprietor in a letter to this office, is placed on record as a notable matter of history for future reference :

COWS.

DUCHESSES.

1st Duchess of Oneida, red and white; calved January 24, 1870; by 10th Duke of Thorndale, (28458,) dam 8th Duchess of Geneva, Lord Skelmersdale, England	\$30,600
7th Duchess of Oneida, red and white; calved August 3, 1872; by 2d Duke of Oneida, (9926,) dam 1st Duchess of Oneida, A. J. Alexander, Kentucky	19,000
10th Duchess of Geneva, roan; calved May 15, 1867; by 2d Duke of Geneva, (23752,) dam 5th Duchess of Geneva, H. W. B. Berwick, Scotland, agent for Lord Bective	35,000
8th Duchess of Oneida, roan; calved November 18, 1872; by 4th Duke of Geneva, (7931,) dam 10th Duchess of Geneva, Mr. Berwick, for Lord Bective ..	15,300
13th Duchess of Thorndale, red; calved February 25, 1867; by 10th Duke of Thorndale, (28458,) dam 10th Duchess of Thorndale, Hon. A. B. Conger, Waldberg, Haverstraw, New York	15,000
4th Duchess of Oneida, red; calved January 17, 1872; by 4th Duke of Geneva, (7931,) dam 13th Duchess of Thorndale, E. G. Bedford and T. J. Megibben, Kentucky	25,000
8th Duchess of Geneva, red and white; calved July 23, 1866; by 3d Lord Oxford, (22200,) dam 1st Duchess of Geneva, R. Pavin Davies, Gloucestershire, England	40,600
10th Duchess of Oneida, red and white; calved April 8, 1873; by 2d Duke of Oneida, (9926,) dam 8th Duchess of Geneva, A. J. Alexander, Kentucky	27,000
9th Duchess of Oneida, roan; calved March 2, 1873; by 2d Duke of Oneida, (9926,) dam 12th Duchess of Thorndale, Mr. Berwick, for Lord Bective	10,000
12th Duchess of Thorndale, roan; calved October 13, 1865; by 6th Duke of Thorndale, (23794,) dam 5th Duchess of Thorndale, Hon. A. B. Conger	5,700
3d Duchess of Oneida, roan; calved March 19, 1871; by 4th Duke of Geneva, (7931,) dam 8th Duchess of Thornton, Mr. Holford, England	15,600
8th Duchess of Thorndale, roan; calved September 11, 1862; by 3d Duke of Airdrie, (23717,) dam Duchess of Fordham, C. F. Wadsworth, Geneseo, New York	450
15th Duchess of Geneva, red; calved June 20, 1870; by 4th Duke of Geneva, (7931,) dam 12th Duchess of Geneva—breeding uncertain, and withdrawn by unanimous consent.	
5th Duchess of Oneida died from an accident since catalogue was issued.	

OXFORDS.

3d Countess of Oxford, red; calved July 3, 1871; by Baron of Oxford, (23371,) dam 2d Countess of Oxford, Hon. A. B. Conger	9,100
2d Countess of Oxford, red; calved December 22, 1866; by 2d Duke of Geneva, (23752,) dam Gem of Oxford, A. W. Griswold, Malvern Farms, Morrisville, Vermont	2,100
12th Maid of Oxford, rich roan; calved October 18, 1872; by 4th Duke of Geneva, (7931,) dam 2d Maid of Oxford, Colonel Lewis G. Morris, Fordham, New York	6,000
2d Maid of Oxford, roan; calved October 22, 1862; by Grand Duke of Oxford, (16184,) dam Oxford 20th, A. W. Griswold	6,000

3d Maid of Oxford, red and white; calved September 21, 1863; by Grand Duke of Oxford, (16184,) dam Oxford 20th, Warnock & Megibben, Kentucky.....	\$1, 000
7th Lady of Oxford, red and white; calved November 2, 1863; by 6th Duke of Thorndale, (23794,) dam 2d Lady of Oxford, Hon. A. B. Cornell, Ithaca, New York.....	400
12th Lady of Oxford, red and white; calved December 15, 1869; by 10th Duke of Thorndale, (23458,) dam 7th Lady of Oxford, Mr. Holford, England	7, 000

MISCELLANEOUS.

Lady Knightley 2d, roan; calved October 11, 1868; by 3d Duke of Geneva, (23753,) dam Dewdrop, E. K. Thomas, Kentucky.....	3, 100
Lady Knightley 3d, roan; calved July 28, 1871; by 2d Duke of Tregunter, (26022,) dam Lady Knightley 2d, Colonel Lewis G. Morris	5, 000
Lady Knightley 4th, red; calved July 30, 1872; by 4th Duke of Geneva, (7931,) dam Lady Knightley 2d, A. W. Griswold	4, 000
Rosamond 7th, red roan; calved May 26, 1868; by Weehawken, (5260,) dam Rosamond, W. R. Duncan, Towanda, Illinois.....	700
Rosamond 5th, red; calved April 13, 1867; by 3d Duke of Geneva, (23753,) dam Rosamond 4th, Warnock & Megibben	700
Rosamond 4th, light roan; calved February 10, 1864; by Iron Duke, (4043,) dam Rosamond 2d, James Mix, Kankakee, Illinois	550
Lady Newham 4th, red; calved December 17, 1867; by Weehawken, (5260,) dam May Queen, James Mix.....	250
Lady Newham 5th, red; calved April 12, 1870; by Weehawken, (5260,) dam Lady Newham 2d, James Mix.....	450
Lady Newham 6th, red; calved September 4, 1870; by Royal Briton, (27351,) dam Lady Newham 4th, Hughes & Richardson, Lexington, Kentucky.....	775
Lady Newham 8th, roan; calved May 21, 1871; by Baron of Oxford, (23371,) dam Lady Newman 2d, Hon A. B. Conger.....	1, 100
Lady Newham 10th, red; calved August 4, 1872; by 4th Duke of Geneva, (7931,) dam Lady Newham 4th, Hughes & Richardson	525
Rosamond 10th, red; calved October 13, 1871; by 4th Duke of Geneva, (7931,) dam Rosamond 4th, W. R. Duncan, Towanda, Illinois	2, 050
Rosamond 12th, red; calved December 27, 1872; by 4th Duke of Geneva, (7931,) dam Rosamond 4th, A. W. Griswold.....	525
Lady Newham 9th, red; calved May 20, 1872; by 4th Duke of Geneva, (7931,) dam Lady Newham 2d, Hon. A. B. Cornell.....	400
Lady Newham 2d, red and white; calved June 25, 1861; by Belmont, (2533,) James Mix	205
Lady Newham 11th, red; calved January 22, 1873; by 2d Duke of Oneida, (9926,) Hughes, & Richardson	405
Lady Newham 12th, red; calved June 27, 1873; by 2d Duke of Oneida, (9926) Hughes & Richardson	305
Brenda, roan; calved November 27, 1870; by 4th Duke of Geneva, (7931,) Colonel L. G. Morris	2, 500
Berlinda, roan; calved March 21, 1872; by 4th Duke of Geneva, Colonel L. G. Morris.....	2, 300
Berlina, white; calved December 7, 1863; by Lord Mayor of Oxford, (4954,) Caleb Haley, New York	325
Bloom 2d, red and white; calved June 9, 1867; by 4th Lord of Oxford, (5903,) I. P. Fisher, Danville, Ky.....	800
Bloom 4th, red and white; calved April 14, 1872; by the 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	1, 000
Bloom 5th, red and white; calved April 29, 1873; by 2d Duke of Oneida, (9926,) Cassius M. Clay, Kentucky.....	900
Mazurka 9th, red roan; calved May 13, 1860; by 3d Duke of Airdrie, (23717,) Colonel W. S. King, Minneapolis, Minnesota.....	600
Moselle, red roan; calved May 28, 1864; by Lord of the Alley, (5901,) A. W. Griswold	1, 425
Moselle 6th, red; calved July 2, 1872; by 4th Duke of Geneva, (7931,) Colonel W. S. King.....	800
Magnolia, red; calved May 4, 1870; by 4th Duke of Geneva, (7931,) A. W. Griswold	225
Peri 5th, red and white; calved August 13, 1872; by 2d Duke of Oneida, (9926,) Colonel W. S. King.....	1, 300
Peri 4th, red and white; calved October 26, 1869; by 10th Duke of Thorndale, (28458,) dam Penance by 2d Grand Duke, (12961,) Colonel W. S. King.....	1, 700

Lady Bates 4th, read roan; calved October 2, 1867; by 11th Duke of Thorndale, (5611,) Edwin G. Bedford, Paris, Kentucky.....	\$3, 250
Lady Bates 5th, red and white; calved February 20, 1868; by 11th Duke of Thorndale, (5611,) Geo. M. Bedford, Paris Kentucky.....	1, 100
Lady Bates 6th, roan; calved April 15, 1872; by 4th Duke of Geneva, (7931,) Geo. M. Bedford.....	2, 300
Lady Bates 7th, red; calved May 17, 1872; by 4th Duke of Geneva, (7931,) Hon. Alonzo B. Cornell.....	1, 600
Lady Bates, roan; calved February 2, 1863; by Duke of Airdrie, (12730,) Chas. F. Wadsworth, Geneseo, New York.....	305
Calf from Lady Bates 4th, Colonel W. S. King.....	1, 600
Wild Flower, red; calved July 23, 1862; by Clifton Duke, (3760,) B. B. Groom, Winchester, Kentucky.....	400
Wilda, red; calved January 6, 1873; by 4th Duke of Geneva, (7931,) Hughes & Richardson.....	950
Nacuna, roan; calved May 25, 1866; by 9th Duke of Thorndale, (5609,) James Mix.....	475
Victoria 7th, red; calved July 30, 1867; by 6th Duke of Thorndale, (23794,) A. W. Griswold.....	1, 525
Victoria 9th, red; calved October 20, 1871; by Royal Briton, (27351,) Hon. A. B. Cornell.....	800
Victoria 10th, red and white; calved March 19, 1873; by 2d Duke of Oneida, (9926,) Hon. A. B. Cornell.....	500
Alpheia, red; calved March 27, 1871; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	500
Alpha, roan; calved February 3, 1863; by Grand Turk, (12969,) Hon. Lewis F. Allen, Black Rock.....	300
Adalina, red and white; calved March 28, 1866; by 6th Duke of Thorndale, (23794,) Hon. A. B. Cornell.....	500
Arabella, red; calved October 27, 1867; by 10th Duke of Thorndale, (23452,) Hon. A. B. Cornell.....	425
Armentine, red; calved October 22, 1872; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	500
Araminta, red roan; calved April 7, 1868; by 10th Duke of Thorndale, (5610,) Hon. A. B. Cornell.....	500
Aleyone, red and white; calved April 15, 1872; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	700
Arminta, roan; calved November 21, 1871; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	425
Adeliza, red and white; calved November 14, 1870; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	400
Atlantic Gwynne, roan; calved June 10, 1870; by Grand Duke of Lightburne, (26290,) Lord Skelmersdale.....	2, 000
Miss Gwynne, roan; calved April 11, 1873; by 2d Duke of Oneida, (9926,) Colonel W. S. King.....	1, 700
Roan Duchess 3d, red and white; calved October 3d, 1867; by 11th Duke of Thorndale, (5611,) George M. Bedford, Paris, Kentucky.....	1, 025
Butterfly Belle, red roan; calved September 24, 1864; by Imperial Oxford, (24185,) A. W. Griswold.....	875
Butterfly Beauty, red; calved October 12, 1867; by 2d Duke of Geneva, (23752,) A. W. Griswold.....	270
Butterfly Bland, red; calved May 9, 1872; by 4th Duke of Geneva, (7931,) Hon. A. B. Cornell.....	825
Baron Oxford's Beauty, roan; calved March 11, 1868; by Baron Oxford, (23375,) Bush & Hampton, Winchester, Kentucky.....	1, 500
Heifer calf of above, by 2d Duke of Oneida, B. F. Van Meter, Winchester, Kentucky.....	500
Beauty's Pride, red; calved April 27, 1872; by 4th Duke of Geneva, (7931,) A. W. Griswold.....	1, 725
May Lass 2d, red roan; calved March 25, 1868; by General Napier, (24023,) Hughes & Richardson.....	800
Lady Worcester 4th, rich roan; calved June 3, 1868; by 2d Duke of Wetherby, (21618,) Mr. Holford, England.....	3, 000
Lady Worcester 5th, red; calved April 20, 1871; by 4th Duke of Geneva, (7931,) Mr. Holford.....	3, 100
Sidonia 2d, red; calved August 6, 1868; by Didmartin Duke, (21546,) Hughes & Richardson.....	800
Sidonia 4th, red; calved May 11, 1873; by 4th Duke of Oneida, (11799,) Hughes & Richardson.....	530
Cherry Constance, roan; calved October 10, 1869; by 4th Duke of Geneva, (7931,) sold with young bull-calf, Colonel W. S. King.....	1, 100

Cherry Constance 2d, red; calved May 6, 1872; by 11th Duke of Geneva, (9843,) T. J. Megibben, Cynthiana, Kentucky.....	\$1,725
Empress of Acomb, rich roan; calved April 18, 1867; by Lord Blithe, (22126,) Hon. David Christie, Paris, Canada.....	525
White Empress, white; calved December 6, 1871; by Royal Briton, (27351,) Simon Beattie, Bangor, Canada.....	1,000
Fidessa, roan; calved May 23, 1867; by Duke of Gwynne, (4730,) with bull-calf just dropped, I. P. Fisher, Kentucky.....	555
War Trophy, red roan; calved May 31, 1868; by Cherry Prince, (23555,) B. B. Groom.....	250
Water Lily, red and white; calved May 12, 1868; by Breast Plate, (19337,) Bush & Hampton.....	1,125
Mistress Ford, roan; calved December 15, 1868; by Lord Lyons, (26677,) Simon Beattie.....	500
Lady Valentine 3d, roan; calved January 1, 1871; by 4th Duke of Geneva, (7931,) James Miles, Pennsylvania.....	525
Rose of Summer, red; calved April 6, 1872; by Knight of St. George, (26544,) out of health and withdrawn.....	

BULLS.

1. 2d Duke of Oneida, red; calved August 3, 1870; T. J. Megibben, Cynthiana, Kentucky.....	\$12,000
2. 4th Duke of Oneida, red and white; calved January 16, 1872; (sold under guarantee that "he has been, is now, and will be a getter,") Hon. A. B. Cornell.....	7,600
3. Alderman, calved 1871, Hon. A. B. Cornell.....	250
4. Advance, 1871, James Mix, Illinois.....	180
5. Wild Oats, W. R. Duncan, Illinois.....	160
6. 7th Duke of Oneida, A. W. Griswold.....	4,000
7. Waterman, B. P. Goff, Clark County, Kentucky.....	325
8. Fidalgo, W. R. Duncan.....	275
9. Mill Boy, Mr. Palmer, Virginia.....	300
10. Prince Alfred, Thomas Dun, London, Ohio.....	600
11. 10th Earl of Oxford, Hon. A. B. Cornell.....	2,500
12. Roderigo, C. M. Lansing, Attica, New York.....	200
13. 6th Lord Oxford, Simon Beattie.....	1,300
14. Rufus, Professor M. Miles, Lansing, Michigan.....	350
15. Baron Bates 5th, Hon. A. B. Cornell.....	525
16. Bright Butterfly, Hon. A. B. Cornell.....	200
17. Bull calf of Lady Worcester 4th, Simon Beattie.....	450

[Of the above bulls, Nos. 5 to 11, inclusive, were yearlings, and all the later ones calves of 1873. Nos. 1, 3, 4, 6, 8, 10, and 12 were got by 4th Duke of Geneva; No. 2 by Baron of Oxford; No. 5 by Royal Duke of Oxford; No. 7 by Royal Briton, and Nos. 9, 11, 13, 14, 15, 16, and 17 by 2d Duke of Oneida.]

SUMMARY.

11 Duchesses, averaging \$21,709 each.....	\$238,800
7 Oxfords, averaging \$4,514 each.....	31,600
74 other females, averaging \$1,086 each.....	80,375
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92 cows and heifers, averaging \$3,813 each.....	350,775
17 bulls and bull calves, averaging \$1,836 each.....	31,215
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109 head, \$3,504.....	381,990

In the above summary the 8th Duchess of Thorndale, whose age probably incapacitated her from breeding, is counted among the "other females." For the same reason six other old cows were sold, at the request of the audience, as beef-cattle.

MARKET PRICES OF FARM PRODUCTS.

AUGUST AND SEPTEMBER, 1873.

The following quotations represent the state of the market, as nearly as practicable, at the beginning of each month.

Articles.	August.	September.
NEW YORK.		
Flour, superfine State per barrel..	\$4 90 to \$5 25	\$5 10 to \$5 65
extra State do.....	6 00 to 7 10	6 35 to 7 50
superfine western..... do.....	4 90 to 5 25	5 10 to 5 65
extra to choice western..... do.....	5 85 to 10 75	6 30 to 10 75
southern ship'g, com. to choice..... do.....	6 25 to 7 85	6 65 to 7 85
southern family, ord'y to choice..... do.....	7 90 to 10 75	7 85 to 10 75
Wheat, No. 1 spring..... per bushel..	1 46 to 1 47	1 62 to 1 64
No. 2 spring..... do.....	1 41 to 1 42	1 53 to 1 59
winter, red, western..... do.....	1 50 to —	1 58 to 1 65
winter, amber, western..... do.....	1 57 to 1 62	1 68 to 1 73
winter, white, western..... do.....	1 50 to 1 80	1 65 to 1 85
Rye do.....	80 to —	95 to —
Barley do.....	— to —	— to —
Corn do.....	43 to 58	52 to 68
Oats do.....	41 to 52	43 to 47 ³ / ₄
Hay, first quality per ton..	30 00 to 34 00	24 00 to 31 00
second quality..... do.....	28 00 to 30 00	20 00 to —
Pork, mess..... per barrel..	17 50 to —	17 50 to 17 70
extra prime..... do.....	15 00 to 15 25	15 00 to 15 12 ¹ / ₂
prime mess..... do.....	— to —	16 50 to 17 50
Lard per pound..	8 ⁹ / ₁₆ to 8 ³ / ₄	8 ⁷ / ₁₆ to 9
Beef, plain mess..... per barrel..	9 00 to 10 50	9 00 to 10 50
extra mess..... do.....	11 25 to 12 50	11 25 to 12 50
Butter, western..... per pound..	13 to 25	14 to 25
State dairy..... do.....	25 to 33	25 to 33
Cheese, western factory..... do.....	10 ¹ / ₄ to 13 ³ / ₄	10 to 12 ¹ / ₂
State factory..... do.....	13 to 14	12 to 13
Cotton, ordinary to good ordinary..... do.....	14 ¹ / ₂ to 17 ³ / ₄	14 to 17 ¹ / ₂
low middling to good middli'g..... do.....	19 ³ / ₈ to 22 ³ / ₄	19 to 22
Sugar, soft yellow..... do.....	9 to 10 ³ / ₈	9 ³ / ₈ to 10 ¹ / ₂
soft white..... do.....	10 ¹ / ₄ to 10 ³ / ₈	10 ³ / ₈ to 11 ¹ / ₂
Tobacco, lugs, all grades..... do.....	7 to 8 ¹ / ₂	7 to 8 ¹ / ₂
com. to med. leaf, all grades..... do.....	8 ¹ / ₂ to 10 ³ / ₂	8 ¹ / ₂ to 10 ³ / ₂
Wool, American Saxony fleece..... do.....	50 to 53	50 to 53
American merino, full blood..... do.....	48 to 50	48 to 50
American, combing..... do.....	55 to 60	55 to 60
California, spring clipped..... do.....	18 to 31	18 to 31
California, fall clipped..... do.....	16 to 22	16 to 22
Texas..... do.....	16 to 33	16 to 33
BOSTON.		
Flour, western, superfine..... per barrel..	4 50 to 5 50	5 00 to 5 50
western extras..... do.....	6 00 to 9 00	6 25 to 9 00
western choice..... do.....	9 00 to 11 00	9 00 to 10 75
southern extras..... do.....	6 00 to 6 50	6 25 to 6 75
choice Baltimore..... do.....	9 00 to 11 00	9 00 to 11 00
Wheat per bushel..	1 45 to 1 80	1 45 to 1 80
Rye do.....	80 to 85	95 to —
Barley do.....	90 to 1 20	— to —
Oats do.....	43 to 55	43 to 57
Corn, southern yellow..... do.....	64 to 66	71 to 72
western yellow..... do.....	64 to 66	71 to 72
Hay, eastern and northern..... per ton..	18 00 to 30 00	18 00 to 30 00

Market prices of farm products—Continued.

Articles.	August.	September.
BOSTON—Continued.		
Beef, western mess.....per barrel..	\$10 50 to \$12 50	\$10 50 to \$12 50
western extra.....do.....	12 50 to 13 50	12 50 to 13 50
Pork, prime.....do.....	14 00 to 15 00	15 00 to 15 50
mess.....do.....	17 00 to 18 00	18 00 to 18 50
Lard.....per pound..	8 $\frac{3}{4}$ to 9 $\frac{1}{4}$	8 $\frac{3}{4}$ to 9 $\frac{1}{2}$
Butter, N. Y. and Vt. fair to choice.....do.....	23 to 28	22 to 32
western, fair to choice.....do.....	20 to 25	18 to 26
Cheese, N. Y. and Vt. factory, choice.....do.....	11 $\frac{1}{2}$ to 13	11 $\frac{1}{2}$ to 13 $\frac{1}{2}$
Western factory, choice.....do.....	12 to 12 $\frac{1}{2}$	12 $\frac{1}{2}$ to 13
Cotton, ordinary to good ordinary.....do.....	13 to 17 $\frac{1}{2}$	13 to 17
low middling to middling.....do.....	19 to 22 $\frac{1}{2}$	18 $\frac{3}{4}$ to 22
Sugar, fair to good refining.....do.....	7 $\frac{5}{8}$ to 8 $\frac{5}{8}$	— to —
Tobacco, lugs.....do.....	7 $\frac{1}{2}$ to 9	7 $\frac{1}{2}$ to 9
common to medium leaf.....do.....	9 to 10 $\frac{1}{2}$	9 to 10 $\frac{1}{2}$
Wool, Ohio and Pennsylvania.....do.....	43 to 55	45 to 58
Michigan.....do.....	40 to 43	43 to 50
other western.....do.....	40 to 48	42 to 48
pulled.....do.....	15 to 55	15 to 55
combing-fleece.....do.....	52 to 57	56 to 60
California.....do.....	17 to 35	17 to 35
Texas.....do.....	18 to 30	18 to 30
PHILADELPHIA.		
Flour, superfine.....per barrel..	3 50 to 4 25	3 50 to 4 25
Pennsylvania extra.....do.....	4 00 to 5 00	4 62 $\frac{1}{2}$ to 5 25
Pennsylvania family.....do.....	7 25 to 8 25	7 25 to 8 00
western family.....do.....	6 50 to 8 50	7 50 to 8 25
western fancy.....do.....	9 00 to 10 00	8 00 to 9 50
Wheat, winter, red, western.....per bushel..	1 40 to 1 55	1 60 to 1 65
winter, amber, western.....do.....	1 50 to 1 60	1 63 to 1 70
winter, white, western.....do.....	1 65 to 1 85	1 70 to 1 85
spring.....do.....	1 38 to 1 40	— to 1 60
Rye.....do.....	75 to 78	82 to 85
Barley malt.....do.....	1 10 to 1 40	1 05 to 1 25
Oats, western, white.....do.....	48 to 52	43 $\frac{1}{2}$ to 48
western, mixed.....do.....	41 $\frac{1}{2}$ to —	39 to 44
Corn, yellow.....do.....	58 to 60	66 to —
Hay, fresh, ^a baled.....per ton..	28 00 to 32 00	26 00 to 28 00
common to fair shipping.....do.....	22 00 to 28 00	20 00 to 22 00
Pork, mess.....per barrel..	17 50 to 17 75	17 50 to 17 75
prime mess.....do.....	16 00 to 16 50	16 00 to 16 50
prime.....do.....	14 50 to —	14 50 to —
Beef, western mess.....do.....	8 00 to 10 00	8 00 to 10 00
extra mess.....do.....	10 00 to 12 00	10 00 to 12 00
Warthman's city family.....do.....	15 00 to 15 50	15 50 to —
Lard.....per pound..	8 $\frac{1}{2}$ to 11 $\frac{1}{2}$	8 $\frac{1}{2}$ to 11 $\frac{1}{2}$
Butter, choice.....do.....	18 to 30	18 to 33
good.....do.....	15 to 25	13 to 22
Cheese, New York factory.....do.....	13 to 14	13 to 14
Ohio factory.....do.....	12 to 12 $\frac{1}{2}$	13 to 13 $\frac{1}{2}$
Cotton, ordinary to good ordinary.....do.....	13 $\frac{3}{4}$ to 17 $\frac{1}{2}$	14 $\frac{1}{2}$ to 18 $\frac{1}{2}$
low middling to good middling.....do.....	20 to 22 $\frac{1}{2}$	18 to 23
Sugar, fair to good, refining.....do.....	7 $\frac{3}{4}$ to 8 $\frac{1}{4}$	8 $\frac{1}{2}$ to 8 $\frac{1}{2}$
Wool, Ohio X and XX.....do.....	48 to 50	50 to 52 $\frac{1}{2}$
Ohio combing.....do.....	61 to —	65 to —
Indiana tub.....do.....	50 to 54	53 to 55
pulled.....do.....	22 $\frac{1}{2}$ to 45	— to —
unwashed.....do.....	31 $\frac{1}{2}$ to 37 $\frac{1}{2}$	33 $\frac{3}{8}$ to 42

Market prices of farm products—Continued.

Articles.	August.	September.
BALTIMORE.		
Flour, superfine.....per barrel..	\$4 50 to \$8 50	\$5 00 to \$8 25
extra.....do.....	6 00 to 8 50	6 00 to 9 00
family and fancy.....do.....	7 50 to 10 50	7 50 to 10 75
Wheat, white, fair to choice.....per bushel..	1 60 to 1 75	1 65 to 1 90
amber, choice.....do.....	1 65 to 1 66	1 80 to —
red, common to prime.....do.....	1 45 to 1 63	1 50 to 1 78
red, western.....do.....	1 45 to 1 53	1 60 to 1 65
Rye, common to prime.....do.....	60 to 62	75 to 88
Corn, yellow, southern.....do.....	58 to 59	60 to —
white, southern.....do.....	86 to 87	72 to —
mixed, western.....do.....	56 to 56½	62 to 62½
Hay, western, good.....per ton..	20 00 to 25 00	20 00 to 25 00
Pork, mess.....per barrel..	17 50 to —	15 00 to —
Lard.....per pound..	9 to 9¾	9 to 9¾
Beef, Baltimore mess.....per barrel..	15 00 to 20 00	15 00 to 20 00
extra.....do.....	23 00 to 25 00	23 00 to 25 00
Butter, western.....per pound..	14 to 21	15 to 25
Cheese, eastern cutting.....do.....	13½ to 14	14 to 14½
western cutting.....do.....	12 to 12½	13½ to 14
Cotton, ordinary to good ordinary.....do.....	14 to 16	13 to 17
low middling to middling.....do.....	19 to 20¼	18 to 19¾
Sugar, New Orleans.....do.....	8 to 9½	8 to 9½
Tobacco, common to good, lugs....per cental..	6 00 to 9 50	6 00 to 9 50
common to medium, leaf.....do.....	8 00 to 11 00	8 00 to 11 00
Wool, fleece-washed, com. to fine...per pound..	45 to 50	45 to 50
tub-washed.....do.....	55 to 60	55 to 60
unwashed.....do.....	35 to 38	35 to 38
pulled.....do.....	35 to 40	35 to 40
CINCINNATI.		
Flour, superfine.....per barrel..	4 85 to 5 25	4 75 to 5 50
extra.....do.....	5 85 to 6 25	6 50 to 6 85
family and fancy.....do.....	6 25 to 8 00	6 85 to 8 25
Wheat, red winter, No. 1.....per bushel..	— to 1 30	1 46 to 1 47
red winter, No. 2.....do.....	1 20 to 1 27	1 38 to 1 45
hill.....do.....	1 25 to 1 35	1 45 to 1 50
white winter.....do.....	1 25 to 1 43	1 47 to 1 55
Rye.....do.....	68 to 70	80 to 82
Barley malt.....do.....	1 00 to 1 25	1 10 to 1 30
Corn.....do.....	40 to 52	50 to 53
Oats.....do.....	36 to 43	30 to 40
Hay, baled, No. 1.....per ton..	15 00 to —	16 00 to 18 00
lower grades.....do.....	10 00 to 12 00	12 00 to 15 00
Beef, plate.....per barrel..	11 50 to 12 00	12 00 to 13 00
Pork, mess.....do.....	15 50 to 16 00	16 00 to 16 25
Lard.....per pound..	7½ to 8 ½	7¾ to 8½
Butter, choice.....do.....	20 to 22	22 to 25
prime.....do.....	16 to 18	18 to 20
Cheese, factory.....do.....	11½ to 11¾	13½ to 14
pine-apple.....do.....	— to —	— to —
Cotton, ordinary to good ordinary.....do.....	11¾ to 15	12½ to 15
low middling to middl'g.....do.....	15 to 20	17½ to 19½
Sugar, New Orleans, common to fair..do.....	— to 9½	9¾ to 10¾
good to prime.....do.....	9¾ to 10½	10½ to 11
Tobacco, lugs, all grades.....do.....	6 to 22	7 to 15
leaf.....do.....	8 to 31	9 to 31
Wool, fleece-washed, com. to fine....do.....	35 to 40	42 to 45
tub-washed.....do.....	40 to 45	45 to 47
unwashed, clothing.....do.....	25 to 28	28 to 30
unwashed, combing.....do.....	35 to 37	35 to 37
pulled.....do.....	33 to 35	33 to 36

Market prices of farm products—Continued.

Articles.	August.	September.
CHICAGO.		
Flour, white win'r, ex., f'r to choice, per barrel..	\$6 75 to \$9 00.	\$6 75 to \$9 50
red winter, extras.....do.....	5 75 to 7 00	6 50 to 7 50
good to choice spring, extras.....do.....	6 00 to 6 50	5 75 to 6 50
spring, superfines.....do.....	2 50 to 4 50	2 50 to 4 50
good to fancy Minnesota.....do.....	6 00 to 7 62½	6 00 to 7 75
Wheat, No. 1 spring.....per bushel..	1 25 to —	1 18½ to 1 20
No. 2 spring.....do.....	1 20 to 1 21	1 14 to 1 17
No. 3 spring.....do.....	1 04½ to —	1 10 to 1 10½
Rye, No. 2.....do.....	55 to 56	68 to 68½
Barley, No. 2.....do.....	70 to 81	1 12 to 1 17
Corn, No. 2.....do.....	36½ to 37	40½ to 41
Oats, No. 2.....do.....	26½ to 26¾	27½ to 28½
Hay, timothy.....per ton.....	13 00 to 16 50	10 00 to 15 00
prairie.....do.....	7 00 to 11 00	8 00 to 11 00
Pork, mess.....per barrel..	15 55 to 15 62½	15 75 to 15 85
Beef, mess.....do.....	8 75 to 9 00	8 75 to 9 00
extra mess.....do.....	9 75 to 10 00	9 75 to 10 00
Lard.....per cental..	7 50 to 7 90	7 62½ to 7 87½
Butter, strictly choice yellow.....per pound..	19 to 21	22 to 25
medium to good.....do.....	16 to 17	17 to 20
Cheese, New York factory.....do.....	11 to 12	12½ to 13½
Ohio and western factory.....do.....	9½ to 11	11 to 12½
Sugar, New Orleans, common to fair.....do.....	8 to 9½	8 to 9½
do prime to choice.....do.....	9¾ to 10	8¾ to 9¾
Wool, tub-washed.....do.....	40 to 48	40 to 48
fleece-washed.....do.....	35 to 42	35 to 42
unwashed.....do.....	25 to 26	25 to 30
pulled.....do.....	35 to 38	35 to 38
SAINT LOUIS.		
Flour, white, superfine.....per barrel..	4 50 to 5 00	4 75 to 5 75
winter, extra.....do.....	5 50 to 7 00	6 00 to 6 75
winter, choice and family.....do.....	7 50 to 9 00	7 00 to 9 25
Wheat, red winter, No. 1.....per bushel..	1 48 to —	1 45 to 1 60
red winter, No. 2.....do.....	1 37 to 1 40	1 33 to 1 40
spring, No. 2.....do.....	— to —	1 00 to 1 10
Rye.....do.....	68 to —	62 to 80
Barley.....do.....	65 to —	93 to 1 09
Corn.....do.....	37½ to 46½	44 to 55½
Oats.....do.....	29½ to 36	33 to 37
Hay, prime to choice timothy.....per ton..	14 00 to 17 00	17 50 to 19 50
Pork, mess.....per barrel..	16 50 to 16 62½	16 75 to 17 00
Beef, mess.....do.....	14 00 to —	14 00 to —
Lard.....per pound..	7 to 9½	7½ to 9¾
Butter, choice dairy.....do.....	16 to 17	24 to 27
second-class.....do.....	12 to 14	19 to 22
Cheese, choice factory.....do.....	— to —	13 to 14
Cotton, middling.....do.....	18½ to —	18 to —
Wool, tub-washed.....do.....	42 to 48	50 to 51
unwashed.....do.....	26 to 30	— to —
mixed, combing.....do.....	32 to 35½	35 to 38
NEW ORLEANS.		
Flour, superfine.....per barrel..	4 25 to 4 50	— to —
extra.....do.....	5 00 to 6 75	5 75 to 8 50
choice.....do.....	7 00 to 10 00	8 75 to 9 75
Corn, white.....per bushel..	72 to 73	68 to 68½
mixed.....do.....	58 to 60	65 to 67
Oats.....per bushel..	\$0 42 to \$0 43	\$0 43 to \$0 48
Hay, choice.....per ton.....	25 00 to —	27 00 to 28 00
prime.....do.....	22 00 to —	22 00 to 26 00
Pork, mess.....per barrel..	16 87½ to 17 00	17 00 to 18 50

Market prices of farm products—Continued.

Articles.	August.	September.
NEW ORLEANS—Continued.		
Beef, Texas.....do.....	11 00 to ———	11 00 to ———
northwestern and western.....do.....	14 00 to 15 00	14 00 to 15 00
Fulton Market.....half barrel.....	10 50 to 10 75	10 25 to ———
Lard.....per pound.....	8½ to 10½	8½ to 11½
Butter, choice western.....do.....	20 to 22	24 to 25
choice Goshen.....do.....	34 to 35	— to 35
Cheese, choice western factory.....do.....	12½ to 13	13 to 14
New York cream.....do.....	16 to ———	16 to ———
Cotton, ordinary to good ordinary.....do.....	11½ to 17	12½ to 16½
low middling to good middling.....do.....	17½ to 20	17½ to 19½
Tobacco, lugs.....do.....	6½ to 8½	6½ to 8½
low-leaf.....do.....	9 to 10	9 to 10
medium-leaf.....do.....	10½ to 11	10½ to 11
Wool, clear bale.....do.....	26 to 27	25 to 26
Louisiana, clear.....do.....	18 to 20	18 to 22
Sugar, fair.....do.....	8¾ to 9½	9½ to 10¾
prime.....do.....	10 to ———	10¾ to 11½
yellow, clarified.....do.....	10½ to ———	10¾ to 11
SAN FRANCISCO.		
Flour, superfine.....per barrel.....	4 00 to 4 75	5 00 to 5 25
extra.....do.....	5 00 to 5 25	5 50 to 5 75
higher grades.....do.....	5 25 to 5 75	6 25 to 6 50
Wheat, State.....per cental.....	1 65 to 1 80	2 00 to 2 15
Oregon.....do.....	1 65 to 1 75	2 05 to 2 10
Barley.....do.....	1 10 to 1 30	1 25 to 1 40
Oats.....do.....	1 65 to 1 70	1 60 to 1 75
Corn, white.....do.....	1 30 to ———	1 30 to 1 35
yellow.....do.....	1 25 to 1 27½	1 32½ to 1 35
Hay, State.....per ton.....	— to 15 50	12 50 to 15 50
Pork, mess.....per barrel.....	18 00 to 18 50	18 00 to 18 50
prime mess.....do.....	17 00 to 17 50	17 00 to 17 50
Beef, mess.....do.....	11 50 to ———	10 00 to 10 50
Lard.....per pound.....	10½ to 12	10½ to 12
Butter, overland.....do.....	15 to 25	15 to 25
California.....do.....	25 to 30	25 to 35
Oregon.....do.....	15 to 18	15 to 18
Cheese.....do.....	12 to 15	12 to 15
Wool, native.....do.....	13 to 16	13 to 16
California.....do.....	18 to 25	18 to 25
Oregon.....do.....	18 to 25	24 to 27

LIVE-STOCK MARKETS.

NEW YORK.		
Cattle, extra beeves.....per cental.....	\$12 25 to \$12 50	\$12 50 to \$12 75
lower grades.....do.....	9 00 to 12 00	9 50 to 12 25
average.....do.....	10 25 to 11 00	10 50 to 11 00
Texas.....do.....	7 50 to 9 50	6 50 to 10 00
milk-cows, common to choice.....per head.....	25 00 to 65 00	30 00 to 65 00
calves, fair to prime, milk-fed.....per cental.....	7 00 to 8 50	10 00 to ———
common to ordinary.....do.....	5 00 to 6 50	8 22 average.
Sheep, lambs.....do.....	5 50 to 8 50	5 25 to 8 00
Sheep.....do.....	4 00 to 6 25	4 50 to 6 50
Hogs.....do.....	5 00 to 5 25	4 87½ to 5 37½

Live-stock markets—Continued.

Articles.	August.		September.	
BOSTON.				
Cattle, choice beeves.....per cental..	\$7 12½	to \$7 25	\$7 00	to \$7 12½
extra.....do.....	6 50	to 6 75	6 00	to 6 50
first quality.....do.....	5 62	to 6 25	5 25	to 5 75
second quality.....do.....	5 00	to 5 50	4 75	to 5 00
third quality.....do.....	4 50	to 4 75	4 00	to 4 50
working-oxen.....per pair..	100 00	to 275 00	100 00	to 250 00
milch-cows with calves.....per head..	35 00	to 60 00	35 00	to 60 00
extra.....do.....	55 00	to 75 00	65 00	to 80 00
farrow cows.....do.....	15 00	to 35 00	15 00	to 35 00
yearlings.....do.....	10 00	to 18 00	10 00	to 18 00
veal-calves.....do.....	4 00	to 12 00	4 00	to 12 00
Sheep, in lots.....do.....	3 00	to 3 75	3 00	to 4 00
extra.....do.....	4 00	to 6 00	4 50	to 5 50
spring lambs.....per cental..	6 50	to 8 50	6 00	to 7 50
Hogs, western, fat.....do.....	6 00	to —	6 00	to —
PHILADELPHIA.				
Cattle, fair to extra choice beeves..per cental..	6 25	to 7 75	5 00	to 7 50
common.....do.....	4 50	to 5 50	3 50	to 4 50
Sheep, fair to good.....do.....	4 50	to 5 75	4 50	to 6 12½
common.....per head..	—	to —	2 00	to 3 50
Hogs, corn-fed.....per cental..	7 50	to 7 75	6 75	to 7 25
BALTIMORE.				
Cattle, best beeves.....per cental..	5 50	to 6 87	5 25	to 6 50
first quality.....do.....	4 50	to 5 50	4 25	to 5 25
medium, or good fair quality..do.....	4 00	to 4 50	3 75	to 4 25
ordinary thin steers, oxen, or cows.....do.....	3 50	to 4 00	2 75	to 3 25
general average of market.....do.....	5 12	to —	4 50	to —
extreme range of prices.....do.....	3 50	to 6 87½	2 75	to 6 50
Sheep, fair to good.....do.....	4 50	to 5 00	4 00	to 5 00
good to extra.....do.....	4 00	to 6 00	5 00	to 5 75
lambs.....do.....	2 00	to 4 50	2 00	to 4 00
Hogs, corn-fed.....per cental..	7 25	to 7 62½	6 25	to 6 50
CINCINNATI.				
Cattle, shipping.....per cental..	4 75	to 5 00	—	to —
prime butchers'.....do.....	4 25	to 4 75	4 75	to 5 00
fair to good butchers'.....do.....	3 75	to 4 25	3 75	to 4 50
Sheep, common to prime.....do.....	3 00	to 4 00	3 00	to 4 75
lambs.....do.....	4 00	to 6 00	4 00	to 5 50
Hogs, common to extra.....do.....	4 60	to 5 00	4 50	to 4 75
CHICAGO.				
Cattle, extra-graded steers, 1,400 pounds and upwards.....per cental..	5 80	to 6 10	5 80	to 6 00
choice beeves, fine, fat, well-formed steers, 3 to 5 years old, 1,250 pounds and upwards.....per cental..	5 40	to 5 65	5 40	to 5 70
good beeves, well-fattened, finely formed steers, 1,150 to 1,250 pounds, per cental..	5 00	to 5 25	4 80	to 5 20
medium grade steers in fair flesh, 1,050 to 1,200 pounds...per cental..	4 60	to 4 90	4 50	to 4 75
butchers' stock, common to fair steers and good to extra cows, 800 to 1,100 pounds.....per cental..	3 25	to 4 25	3 00	to 4 25

Live-stock markets—Continued.

Articles.	August.		September.	
CHICAGO—Continued.				
Common cattle, in decent flesh, 700 to 1,050 pounds.....per cental..	\$3 00 to	\$4 25	\$2 75 to	\$4 00
Texans, north-wintered.....do.....	3 25 to	4 50	3 25 to	4 25
through droves.....do.....	2 00 to	2 75	1 50 to	2 75
Sheep.....do.....	2 90 to	4 75	3 00 to	4 50
Hogs, good to choice.....do.....	4 20 to	4 50	4 25 to	—
SAINT LOUIS.				
Cattle, choice native steers, 1,300 to 1,600 pounds.....per cental..	5 50 to	6 00	5 25 to	5 75
prime second-class natives, 1,150 to 1,400 pounds.....per cental..	5 00 to	5 50	4 75 to	5 25
good third-grade native, 1,050 to 1,300 pounds.....per cental..	4 50 to	5 00	4 00 to	4 50
fair butchers' steers, 1,000 to 1,200 pounds.....per cental..	4 00 to	4 50	3 50 to	4 00
light, uneven stock-steers, 500 to 850 pounds.....per cental..	3 50 to	4 00	3 25 to	3 75
good Texans and Cherokees, corn-fat-tened.....per cental..	3 50 to	4 00	2 75 to	3 25
common and inferior, corn-fed Texans, per cental..	2 75 to	3 25	2 00 to	2 50
inferior to common Texans.....do.....	1 50 to	2 00	1 50 to	2 00
veal calves, common to choice, per head..	6 00 to	7 00	—	—
cows with calves.....do.....	—	—	—	—
Sheep.....per cental..	4 25	—	3 20 to	3 50
Hogs, extra grades, gross.....do.....	4 35 to	4 40	4 50 to	5 00
fair to good, gross.....do.....	4 15 to	4 30	4 10 to	4 50
common to medium, gross.....do.....	4 00 to	4 10	4 00	—
Horses, good driving animals,.....per head..	125 00 to	175 00	125 00 to	175 00
extra driving animals.....do.....	—	225 00	—	225 00
common to fair animals.....do.....	90 00 to	125 00	90 00 to	125 00
heavy draught-horses.....do.....	120 00 to	185 00	120 00 to	185 00
extra.....do.....	—	230 00	—	230 00
Mules, good heavy animals.....do.....	120 00 to	190 00	120 00 to	190 00
extra.....do.....	—	225 00	—	225 00
15½ to 16 hands high.....do.....	120 00 to	150 00	120 00 to	150 00
extra.....do.....	—	180 00	—	180 00
NEW ORLEANS.				
Cattle, Texas beeves, corn-fed, second quality, per head..	40 00 to	50 00	40 00	50 00
Texas beeves, choice.....do.....	—	50 00	—	50 00
first quality.....do.....	35 00 to	45 00	35 00 to	45 00
second quality.....do.....	20 00 to	28 00	20 00 to	28 00
western beeves,.....per cental..	12 00 to	15 00	10 00 to	15 00
milch-cows.....per head..	35 00 to	50 00	35 00 to	50 00
milch-cows, choice.....do.....	80 00 to	100 00	80 00 to	100 00
calves.....do.....	7 00 to	10 00	7 00 to	10 00
Hogs, gross.....per cental..	6 00 to	7 00	6 00 to	7 00
Sheep, first quality.....do.....	4 00 to	5 00	4 00 to	5 00
second quality.....do.....	3 00 to	4 05	3 00 to	4 05

FOREIGN MARKETS.

WHEAT.—The conditions of vegetation in the British Islands, during June and July, were, on the whole, favorable to the growth and gathering of the grain crops, yet in many localities the wheat crop fell below that of the previous year. In France the growth of this cereal was in several departments considerably interrupted by rain-storms. The general yield was reported very short, though the deficiency was largely made up by the superior quality and weight of the grain. In Germany only a fair crop was expected at the close of harvest, whereas the previous indications had pointed to a bountiful yield. In Hungary, too, a reported improvement was found to have been overrated, while the prevalence of cholera threatened a failure of labor in taking care of the crop. The London prices continued remarkably steady; the brilliant weather for gathering the crop atoning, in some measure, for deficient yield and exhausted stocks. The California crop had been overestimated, and hence its effect in supplying the deficiency was not so great as had been anticipated. In Southern Russia drought had prevailed extensively, with considerable blight, precluding the hope of exuberant supplies from that quarter. New crop supplies at Alexandria, in Egypt, were reported as inferior in quality. On the whole the outlook was to a higher market rate.

The sales of English wheat noted in the Mark Lane Express during the nine weeks ending with August 3, amounted to 270,952 quarters against 377,630 quarters during the corresponding period of 1872. During the first half of these periods the prices of 1872 were the highest, but during the last four weeks the preponderance turned in favor of 1873. The imports of foreign wheat into the United Kingdom, during the eight weeks ending July 26, amounted to 6,307,160 quarters. The London weekly average prices during the nine weeks ending August 3 were as follows: Week ending June 7, 54s. 3d. per quarter on 1,746 quarters; June 14, 57s. 6d. on 3,614 quarters; June 21, 56s. 8d. on 2,945 quarters; June 28, 56s. 10d. on 2,930 quarters; July 5, 56s. 8d. on 1,376 quarters; July 12, 57s. 2d. on 1,457 quarters; July 19, 56s. 5d. on 1,131 quarters; July 26, 56s. 9d. on 1,686 quarters; August 2, 57s. 5d. on 1,038 quarters.

The Mark Lane (London) prices during this period were as follows: English wheats—Essex and Kent, old white 60s. to 68s. per quarter; ditto new white, 51s. to 67s.; ditto old red, 59s. to 64s.; ditto new red, 51s. to 64s. Norfolk, Lincolnshire, and Yorkshire, old red 57s. to 63s. Foreign wheats—Dantzic, 60s. to 65s.; extra ditto, 68s. to 70s.; Konigsberg, 60s. to 65s.; extra ditto, 64s. to 68s.; Silesian, red, 57s. to 60s.; ditto white, 63s. to 64s.; Pomerania, Mecklenberg, and Uckermarek, red, 59s. to 62s.; Russian, hard, 50s. to 52s.; St. Petersburg and Riga, 55s. to 60s.; Danish and Holstein, 58s. to 60s.; American, 54s. to 59s.; California, 60s. to 61s.; Chilian, 60s.; Australian, 60s. to 64s.

Liverpool rates differed but little from those formerly reported. American white wheat brought from 13s. to 14s. per cental; ditto red, 12s. to 12s. 9d.; ditto spring No. 1, 12s. to 12s. 8d.; ditto spring No. 2, 11s. 4d. to 12s. 1d.; Canadian white, 12s. to 13s.; ditto red, 11s. 10d. to 12s. 8d.; California white, 11s. 8d. to 12s. 10d.; Chilian white, 11s. 4d. to 12s. 1d.; French white, 12s. 6d.; ditto red, 11s. 7d. to 12s. 1d.; Spanish white, 11s. 10d. to 12s. 4d.; Danubian, 7s. to 7s. 9d.; Girka, 10s. 4d. to 11s.; Egyptian, 9s. to 11s. 6d.; Australian, 12s. to 13s.

In Paris the prices per quarter about the 1st of August were, 66s. 6d.

for wheat from the south of France, 68s. 9d. for wheat from the west, and 65s. 6d. for that from La Vendee. A correspondent of the Mark Lane Express, under date August 2, reported that during the previous week 33 interior French markets had shown an advance in prices, 54 had remained unchanged, and 13 had declined or had shown a declining tendency. French wheat-growers were at that time very much occupied, and, having received good prices for their previous crops, were disposed to hold their stocks for a better market.

FLOUR.—The imports of flour into the United Kingdom during the eight weeks ending July 26, amounted to 824,984 cwt. The month of August opened with a small supply of English flour in London, but there was plenty of foreign, at least one-half of which was American, the remainder being Russian, Spanish, &c. The supply of country flour was limited, while millers were very cautious in investing in foreign grain on account of the apparent instability of the market, floating cargoes finding but slow sale. American red wheats, however, were quite firm. In Mark Lane prices were but little changed: best English town households brought 47s. to 55s. per sack of 280 pounds; best country households, 43s. to 47s.; Norfolk and Suffolk, 36s. to 43s.; American, per barrel, 26s. to 29s.; ditto, extra, 30s. to 31s. In Liverpool, August 2, English and Irish superfines brought 40s. to 42s. per 280 pounds; extra ditto, 43s. to 51s.; French, 48s. to 53s. 6d.; Spanish, 44s. to 46s.; Trieste and Hungarian, 64s. to 76s.; Chilian and Californian, 42s. to 48s.; American, per barrel, Western State, 28s. 6d. to 31s.; extra, ditto, 30s. to 34s.; Baltimore and Philadelphia, 30s. to 35s.; Ohio, 31s. to 35s.; Canadian, 32s. to 34s.

In Paris the flour market was mostly steady during July, with an improvement at the close of the month; the range of prices for consumption was from 48s. to 51s. 4d. per 280 pounds.

MAIZE.—*London*: White per quarter during June and July, 29s. to 30s. per quarter; yellow, 27s. to 28s. The supplies in the market largely increased about the 1st of August and met with a moderate demand at previous quotations. *Liverpool*: The prices for this grain about August 1st were, for American white, 30s. 6d. to 31s. per 480 pounds; ditto, yellow, 28s. to 28s. 6d.; Trieste, 27s. to 27s. 6d.; Danubian, 27s. 9d. to 28s.; Galatz, 28s. to 28s. 6d.

WOOL.—The English wool-market at the close of July had shown but little alteration. The standing quotations were: for Southdown hogsgets, 1s. 7½d. to 1s. 8½d. per pound; half-breed, ditto, 1s. 8d. to 1s. 9½d.; Kent fleeces, 1s. 10d.; Southdown ewes and wethers, 1s. 5d. to 1s. 6d.; Leicester, ditto, 1s. 8d. to 1s. 9d. At public sales of colonial wool, the attendance was good and biddings animated at the higher range of prices.

LIVE STOCK.—During the last week in July the total imports of foreign stocks into London embraced 12,879 head of cattle against 13,159 in the corresponding week of 1872, 21,993 in 1871, 9,884 in 1870. The prices (per 8 pounds, to sink the offal) for coarse, inferior beasts, 4s. 8d. to 5s. 2d.; second quality, 5s. 4d. to 5s. 8d.; prime, large oxen, 5s. 10d. to 6s. 2d.; prime Scots' short-horn, &c., 6s. 2d. to 6s. 4d.; coarse and inferior sheep, 4s. 10d. to 5s.; prime Southdown, 6s. 2d. to 6s. 4d.; large hogs, 4s. to 4s. 4d.; small porkers, 4s. 8d. to 5s.

